natus®
pediatrics

Instruction Manual

OLYMPIC SMART SCALE®

Model 60/65

CAUTION Read and be familiar with this manual before installing, operating, or servicing this device. To ensure operator, technician, and patient safety, use only as specified in this manual.

602017C

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⚠ CAUTION: Read and be familiar with this instruction manual before using this device.

CAUTION: This device should only be assembled or installed by a qualified technician.

WARNING: Electrical shock hazard when enclosure is open. Always unplug the power cord from the electrical outlet before assembling, cleaning, or servicing.

DANGER: Explosion hazard. Do not use this product in the presence of flammable anesthetics.

Intended Use

The **Model 60** Olympic Smart Scale is an electronic baby scale.

The **Model 65** Olympic Smart Scale is an electronic baby scale attached to a roll-around mobile base.

Both scales weigh babies up to 33 pounds (14.8 kg).

Model 60 Installation

Place the scale on a flat, level table or counter surface. Ensure that the scale cannot slide or "walk" off the edge. The scale weighs approximately 26 lbs (11.7 kg).

⚠ CAUTION: To assure safety, ensure that the scale is on a strong, stable surface.

The Model 65 is shipped completely assembled. With the exception of the Model 65's attached roll-around base, Smart Scale models are operated and serviced in the same manner.

Calibration Check

Every Smart Scale is calibrated at the factory before shipment. However, due to movement during shipping, the scale should be recalibrated before initial use (see *Calibration* on page 3-1).

Carrying the Scale

To pick up a scale, firmly grasp the case at each end (***Fig. 1A***). Never attempt to lift scale by tray.

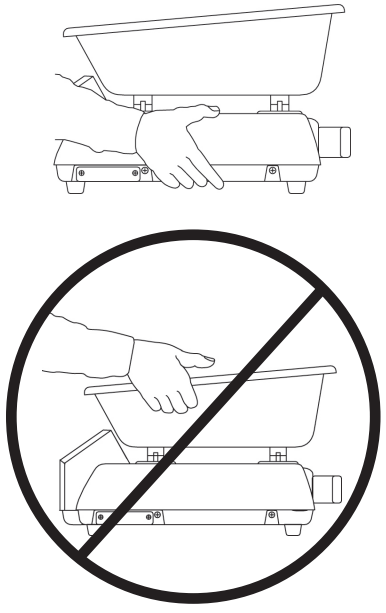


Fig. 1A

Locking Measurement Units (Optional)

The standard configuration of the scale allows you to toggle the units of measurement between metric and English (grams and pounds). To reduce confusion, however, you can permanently lock the units of measure as either grams or pounds.

1. Press **On/Off** on the front panel to turn on the scale.

2. Press **gm/lb** to select the units of measure that you want to use.

3. Press **On/Off** to turn off the scale.

4. Lift and turn over the scale to gain access to the gm/lb disabling switch. With the scale oriented as shown below, the switch can be accessed through a 3/8" hole on the right hand side of the bottom of the scale. (***Fig. 1B***)

5. Flip the gm/lb disabling switch to the left.

6. Press **On/Off** to turn on scale. The selected unit of measure is now locked.

7. Press **gm/lb** to ensure that the unit of measure is locked. If locked, the unit of measure should not change.

8. Apply the appropriate label (**Locked to GRAMS** or **Locked to LB-OZ**) over the **gm/lb** switch.

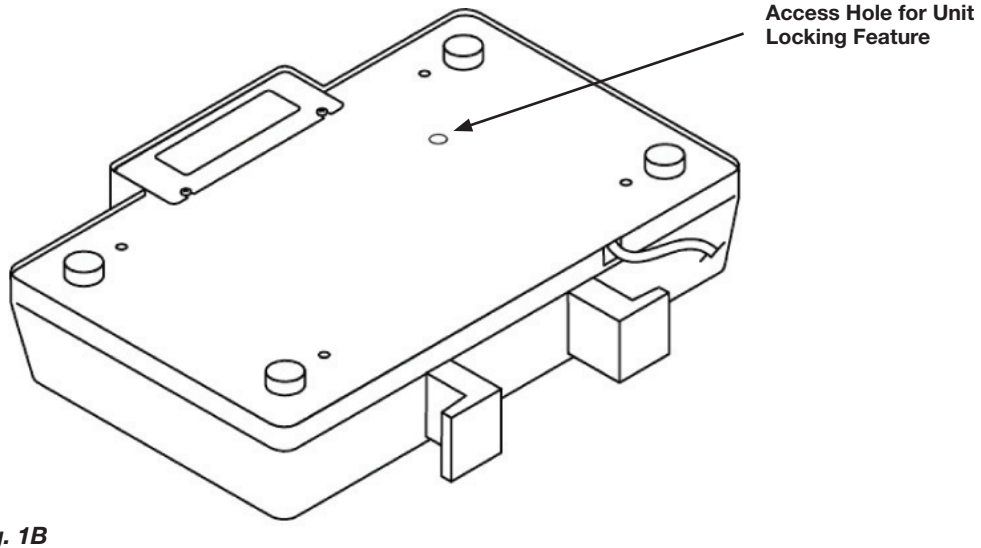


Fig. 1B

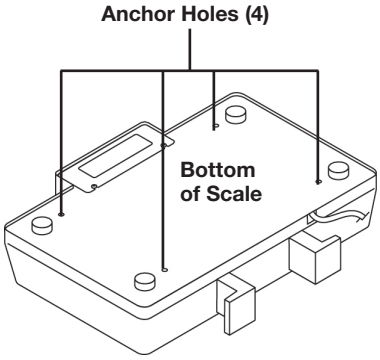


Fig. 1C

Instructions for Cart Mounting

Four threaded (10-32 UNF) holes are provided in the base plate of scale for securing it to any cart or table (***Fig. 1C***). The rubber feet may remain in place.

⚠ CAUTION: If using the scale on a cart, ensure that the scale is securely attached to the cart. Only use cart or tables that are strong and stable enough to safely support the weight of the scale as well as any objects (e.g., baby).

Attaching and Removing Tray

Any time a tray is changed, the scale must be calibrated and the zero offset adjusted with the new tray in place (see *Calibration* on page 3-1 and *Adjusting the Zero Offset* on page 3-17).

⚠ CAUTION: Ensure that all four tray legs are secure before placing a baby in the tray.

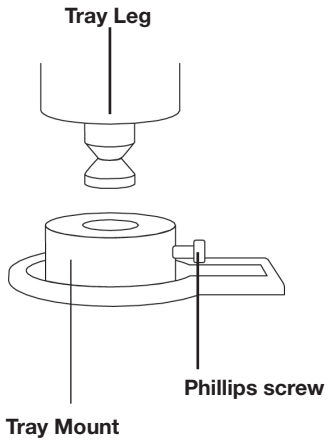


Fig. 1D

To remove the tray:

1. Loosen the four Phillips screws that secure the tray legs (***Fig. 1D***).
2. Lift the tray straight up (***Fig. 1E***).

To attach tray:

1. Lower the tray so all four feet fit into the tray mounts.
2. Securely tighten all four Phillips screws (***Fig. 1D***).

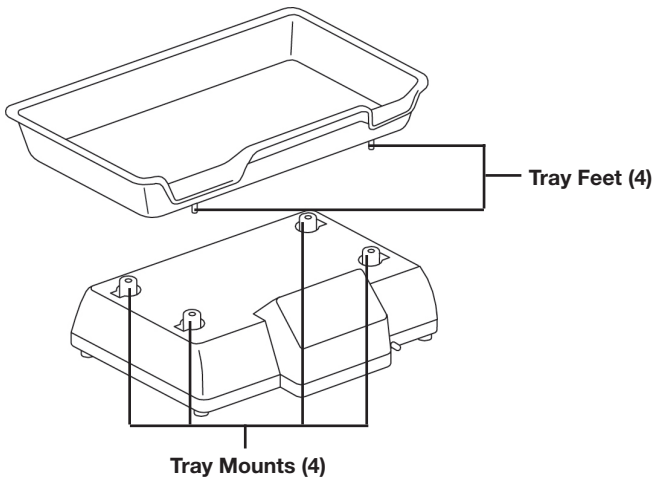


Fig. 1E

Electrical Requirements

The scales are rated at 120 Vac, 60 Hz, 0.2 amps. A 6-ft. (1.8 m) power cord is included with each scale.

⚠ CAUTION: Only connect this device to a hospital-grade electrical outlet.

Electromagnetic Compatibility

This equipment complies with EMC limits for the Medical Device Directive 93/42/EEC (EN 55011Class A and EN 60601-1-2). For more information, see *Section 3: Service,* "EMI/EMC Compatibility."

Battery Operation

When not connected to an electrical outlet, the scale can be powered by its internal rechargeable battery pack. The battery pack includes six sub-c NiCad batteries rated at 7.2 volts (1.2 volts per cell).

For information on replacing the battery pack, see *Replacing the Battery Pack* on page 3-14.

Initial Battery Charge

The Smart Scale has an internal rechargeable battery pack that automatically charges when it is connected to an electrical outlet. Before the scale is battery operated for the first time, the batteries should be charged for approximately 2.5 hours.

Equipment Classification

- CAN/CSA C 22.2 No. 601.1
- UL 2601-1
- Class I
- Type B Equipment
- Ordinary Equipment IXPO
- Continuous Operation

Shipping/Storage Environment

Temperature: -30ºF to 140ºF (-34ºC to 60ºC)

Humidity: 10% to 95% relative humidity

Pressure: 0.5 to 1.0 atmospheres

International Safety Symbols

The following international safety symbols are used on the scale:

Type B Equipment

Protective Earth (Ground)

See instructions

⚠ CAUTION: Read and be familiar with this instruction manual before using or servicing the scale.

CAUTION: This product must be connected directly to a hospital-grade electrical outlet.

CAUTION: Tray must be securely fastened to its base before use.

CAUTION: Never leave the baby unattended.

CAUTION: Never use the scale to transport the baby.

CAUTION: To ensure correct weighing, tray or items in tray must not touch surrounding objects. Avoid leaning against or touching the weighing tray or baby while the weighing is in progress.

CAUTION: If using a roll-around cart, always lock the caster wheels before placing the baby in the tray.

DANGER: Explosion hazard. Do not use this product in the presence of flammable anesthetics.

Summary Instructions

To weigh a baby:

1. Press **On/Off**. Do not touch the tray until the “Standby” light dims and zero appears.
2. Press **gm/lb** to select units.
3. Press **1 gm/5 gm** to select resolution.
4. Press **Zero** (tare function) to cancel the weight of the blankets or other objects on the tray.
5. Place the baby on the tray; weighing begins automatically.
6. Do not touch the tray or baby until the “Averaging” light dims and the “Read” light illuminates; then, read the weight.
7. Press **Reweigh** to weigh the baby again.
8. Press **On/Off** to turn off the scale. If operating on battery power, the scale shuts off automatically after five minutes.
9. If the scale is off, press **Recall** to display the last weight.

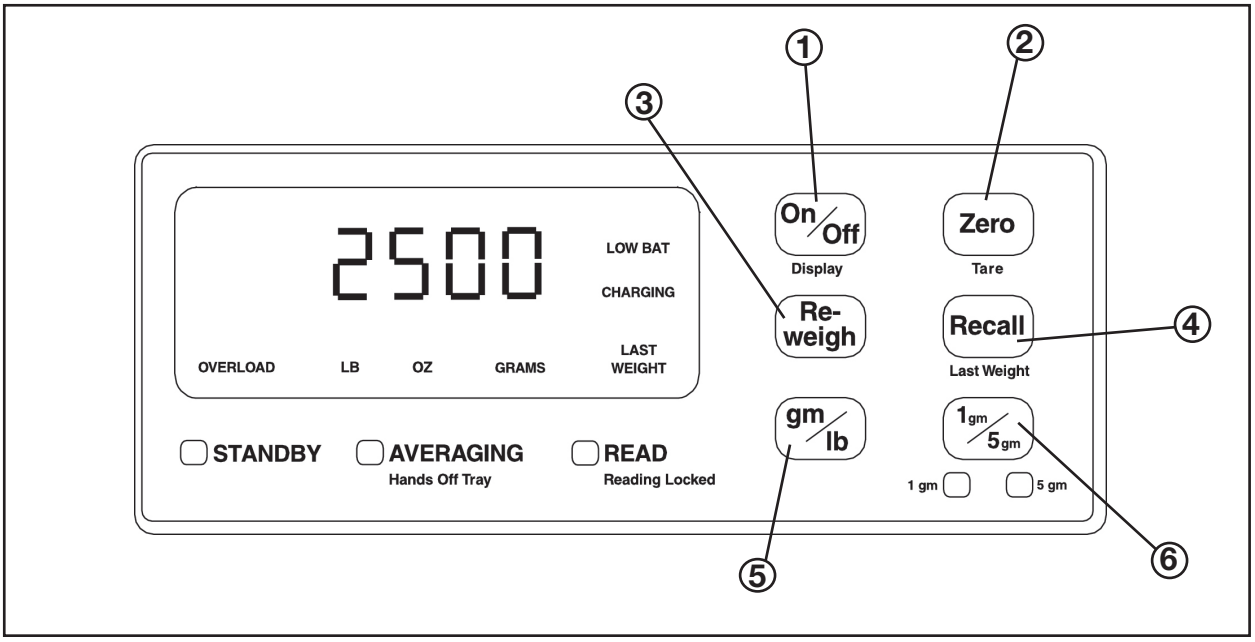


Fig. 2A

Controls

1. **On/Off:** Turns scale display on/off. (If operating on batteries, the scale turns itself off automatically after five minutes of inactivity.)
2. **Zero:** Press to zero (cancel or tare) blankets and other objects.
3. **Reweigh:** Press to reweigh baby (after initial weighing is completed and green "Read" light illuminates).
4. **Recall:** If scale is off, press to display last weight.
5. **Gm/lbs:** Press to convert grams to pounds-ounces and vice versa (ounces to 0.1 ounce).
6. **1 gm/5gm:** Press to select resolution.

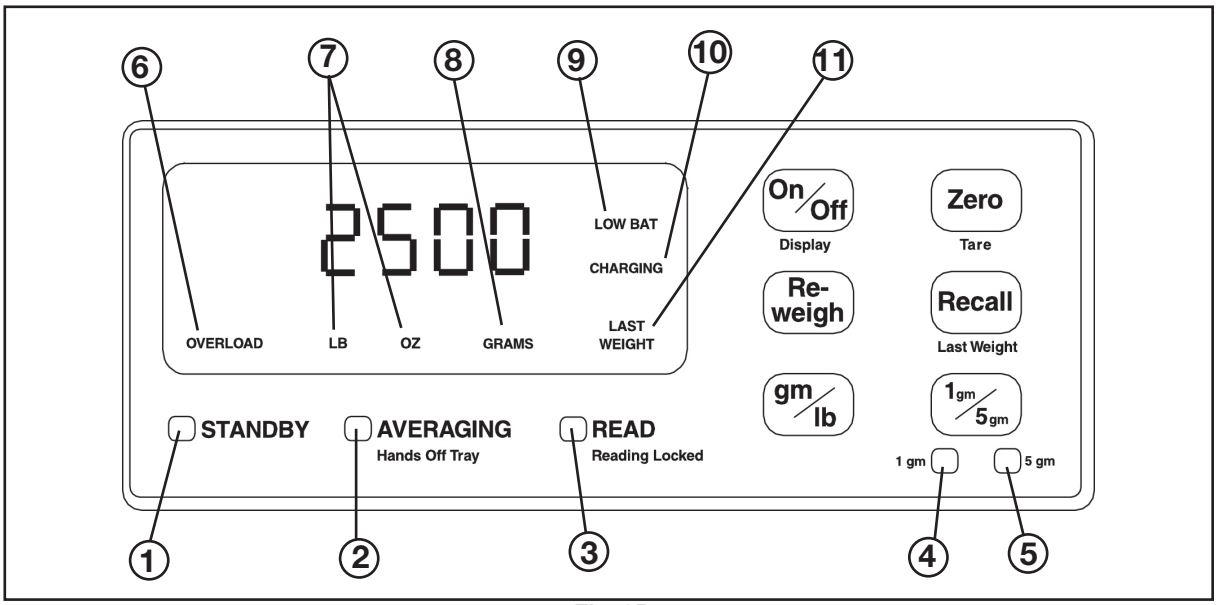


Fig. 2B

Status Lights

(1) **STANDBY:** When flashing, the scale is warming up and automatically zeroing. Do not touch tray; wait until the "Standby" light dims and "0" appears on the display before placing the baby on the tray.

(2) **AVERAGING**
Hands Off Tray : When flashing, that scale has detected baby movement and is automatically computing baby's weight.

⚠CAUTION: Do not touch the tray or baby while the averaging light is flashing — if touched, an error in weight will result.

(3) **READ**
Reading Locked: Okay to read. The final weight has been computed and is locked on the display.

(4) **1 gm:** The scale is set to weigh within onegram resolution.

(5) **5 gm:** The scale is set to weigh within five-grams resolution.

(6) **OVERLOAD:** There is too much weight on the tray. The maximum weight is 33 lbs (14.8 kg).

(7) **LB OZ:** The display shows weight in pounds and ounces.

(8) **GRAMS:** The display shows the weight in grams.

(9) **LOW BAT:** The battery power is low. To recharge, plug the scale into a hospital-grade electrical outlet.

(10) **CHARGING:** The batteries are charging (connected to an electrical outlet).

(11) **LAST WEIGHT:** When illuminated, the display shows the last weight locked before it was turned off.

Display

On/Off

Press **On/Off** to turn the Smart Scale display on or off, respectively. When the Smart Scale display is on, the "Standby" light blinks for a few seconds while the scale warms up and automatically zeros.

NOTE: Do not touch tray until the "Standby" light dims. The "Standby" light will not dim if the tray is moving.

STANDBY

NOTE: If items (e.g., blankets) are placed on the scale before the "0" appears, they will not be weighed—they will be tared out. (See "Tare Function" below.)

Weighing the Baby

When the "Standby" light dims and "0" appears on the display, place the baby in the center of the tray.

When weighing an inactive baby, the "Read" light illuminates and the weight will appear on the display.

READ

Reading Locked

⚠ CAUTION: Never touch the tray or baby while the "Averaging" light is flashing.

CAUTION: Never leave the baby unattended while on the scale.

Tare Function

To cancel (tare out) the weight of blankets or other objects, either:

- If the scale display is already on ("0" on the display), place the blanket on the tray and press **Zero**. The weight of the blanket will be cancelled and "0" will appear on the display.

  –or–

- If the scale display is off, place the blanket on the tray and press **On/Off** (do not touch tray until "Standby" light stops flashing). The weight of the blanket will automatically be cancelled and the display will read "0".

Tare

After the objects (e.g., blankets) have been tared (cancelled), the scale will weigh the baby without including the object's weight.

NOTE: When the scale has been zeroed between weighings, if a blanket is removed from the tray after its weight has been cancelled (tared out), the scale will automatically zero itself again. The "Standby" light may flash for a few seconds and the "0" will reappear on the display. This means that the scale is no longer subtracting the blanket's weight and is ready to start a new weighing.

Weighing Tips:

- Remember, if an object is on the tray and the display shows "0" the weight of the object has been cancelled (tared out). If an additional object, such as a baby, is then placed on the tray, only its weight will be shown.
- If weighing a clothed or diapered baby, the weight of the clothing can be compensated for by placing similar garments on the scale, and then pressing **Zero**. Immediately after placing the baby in the tray—before the scale locks on the weight—remove the extra "zeroed" diaper and other garments.

Active Babies: Averaging the Weight

If the baby is moving, the Smart Scale's "Averaging" light will begin blink and an audible beep will sound.

NOTE: The Averaging Tone Volume Control knob is located below the control panel to the right.

If the baby is moving, the Smart Scale's microprocessors will automatically average the baby's weight. While computating the average weight, the "Averaging" light blinks. Upon completion, the "Read" light illuminates, and the averaged weight locks (shows) on the display.

⚠ CAUTION: Touching the tray or baby while the "Averaging" light is illuminated can result in an incorrect weight. If you do touch the baby, wait until the "Averaging" light dims and the "Read" light illuminates. Then press **Reweigh** to reweigh the baby. (See "Reweigh Feature" on page 2-6).

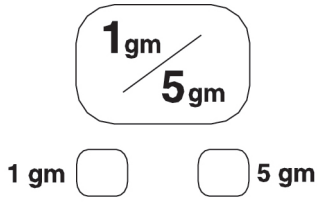
Resolution

Press **1 gm/5 gm** to toggle between two levels of resolution:

- **1 gm—**When the "1 gm" status light is on, the scale measures the weight of the baby within one gram.
- **5 gm—**When the "5 gm" status light is on, the scale rounds the weight of the baby to the nearest 5 grams

NOTE: The scale will remember the setting last used.

NOTE: This feature is inactive if the "Read" light is on or if **Recall** last weight has been pressed (i.e., the weight is locked on the display and cannot be changed).



Weight Lock

The weight remains locked on the display until **Zero** is pressed or scale display is turned off. (When operating on batteries, the display automatically turns off after five minutes of inactivity.)

Reweigh

After the baby has been weighed ("Read" light illuminates), the baby can be reweighed by pressing **Reweigh**. The baby can be reweighed as many times as desired.

Reweighing does not cancel the tare function. If weight of blanket was cancelled (tared out) for the first weighing, it will remain cancelled on reweighing.

> NOTE: The reweigh feature is particularly important when IV tubes require holding in an upright position while weighing the baby.

Recall the Last Weight

Last Weight

If the scale is off, press **Recall** to show the last weight. The value shown during the previous weighing will appear on the display.

Grams/Pounds-Ounces

Grams can be converted to pounds-ounces and vice versa by pressing **gm/lb** (i.e., pressing gm/lb will toggle between grams and pounds). The scale displays ounces to the nearest tenth of an ounce in the 1-gram resolution, or to the nearest two-tenths of an ounce in the 5-gram resolution.

The Smart Scale remembers last setting used. Change the units at any time prior to weighing, or after the scale has finished weighing.

> NOTE: This scale has an option to permanently lock the measurement units in either grams or pounds (see page 1-2).

Weighing Another Baby

Tare

Press **Zero** and wait for "0" to appear on display before placing the next baby on the tray.

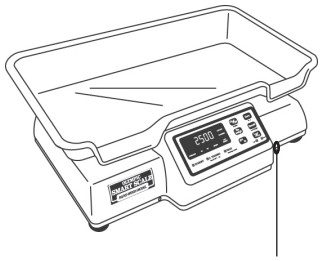
Overload

If the load exceeds 15 kg (33 lbs-1oz), the overload signal on the display panel will illuminate. Reduce the weight on the scale.

Setting the Averaging Signal Volume

The Smart Scale sounds an audible beep to alert users when it is computing a weight in “Averaging” mode — this beep acts as a reminder to keep hands off of the tray.

The Averaging Tone Volume Control knob is located below the control panel to the right. Rotating the knob to the far left silences the tone; rotating the knob to the right gradually increases the volume.



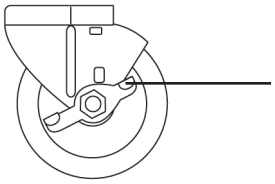
Averaging Tone Volume-Control Knob

Setting the Brakes on Cart-Mounted Scales

The front two casters wheels of the Smart Scale Model 65 have foot brakes. To set or release the brake, step on the lever.

⚠ CAUTION: Always lock the brake casters on the cart before placing a baby in the tray.

CAUTION: Never use the scale to transport the baby.



Brake

Cleaning

Wipe the Smart Scale clean with liquid disinfectant.

⚠ CAUTION: Do not allow liquid to enter case as this may damage the electronics.

CAUTION: To avoid damage to tray, do not wipe with alcohol.

Charging the Battery

The Smart Scale has a rechargeable battery pack that automatically charges ("Charging" signal illuminates on the display panel) whenever the scale is connected to an electrical outlet.

> NOTE: The scale can be used while connected to an electrical outlet with the battery pack removed, or while the batteries are charging.

Charge Life

With fully charged batteries the scale will operate for approximately three hours of continuous use — enough for about 150 weighings.

> NOTE: When the power cord is not in use, wrap it around the cleats on the rear of the scale.

Low Battery (LO BAT)

The LO BAT signal indicates how much battery life remains:

- If slowly blinking, the battery is getting low.
- If lit and steady, approximately 30 minutes of continuous battery-powered operation time remains.
- If rapidly blinking, the battery charge has been depleted and the scale will automatically turn off. Connect the scale to a functioning electrical wall outlet for recharging.

When LO BAT appears, connect the scale to an electrical outlet to recharge the battery.

Battery Pack Replacement

See *Replacing the Battery Pack* on page 3-14.

⚠CAUTION: Service should only be performed by a qualified technician.

CAUTION: This product should be calibrated, at a minimum, every 12 months.

CAUTION: PC boards contain static-sensitive parts. Always use appropriate electro-static device (ESD) protection when enclosure is removed.

WARNING: Electrical shock hazard when enclosure is open. Always unplug the power cord from the electrical outlet before assembling, cleaning, or servicing.

Service Information

The Olympic Smart Scale is designed to allow for performance of service in the field to the printed circuit board (PCB) level. These instructions will assist you in isolating the problem PCB or component. After testing, if a PCB or the loadcell is identified as damaged, return the scale to Natus Medical for repair.

To identify the problem, see *Troubleshooting* on page 3-20.

ESD and Contamination

The integrated circuits and semiconductors on the PCBs can be damaged by electrostatic discharge or contamination by body oil. Observe proper handling cautions at all times.

Calibration

Upon receiving the Smart Scale, and at regular intervals (depending on frequency of use), the scale should be calibrated and the zero offset adjusted with the tray in place (see *Adjusting the Zero Offset* on page 3-17).

As with any precision electronic instrument, the Smart Scale can drift out of calibration over time. Since no electronic scale recalibrates itself automatically, to assure correct calibration, place an accurate, known weight on the scale tray and verify that the shown weight is correct.

Calibration Weight: The Smart Scale calibration procedure requires a 7500 ±1-gram weight. A calibration weight may be ordered from Natus Medical (catalog no. 56315).

Calibrate Before First Use: The Smart Scale was calibrated at the factory in Seattle prior to shipment. Due to movement during shipment and geographic variations in the force of gravity (which can affect calibration by as much as 20 gm), calibrate the scale before initial use.

Calibration Frequency: Calibrate the Smart Scale once every 12 months, at a minimum, or whenever a tray is changed. Calibrate the scale more often if the scale is used frequently. The scale's calibration should not drift by more than 1–2 grams. If the weight has drifted significantly, consult *Troubleshooting* on page 3-20.

Calibration Procedure

To calibrate the scale:

1. Ensure that the scale (and cart) is on a firm, level surface and is protected from moving air. For optimal operation, the ambient temperature should be 70–75ºF (21.1–23.8ºC).
2. Press and hold **Zero** and then press **On/Off**. The current software version (e.g., "CAL 1.0") shows on the display (***Fig. 3A***), then "C 0" appears (***Fig. 3B***) while the scale captures the zero point. Finally, "C 7500" appears (***Fig. 3C***).

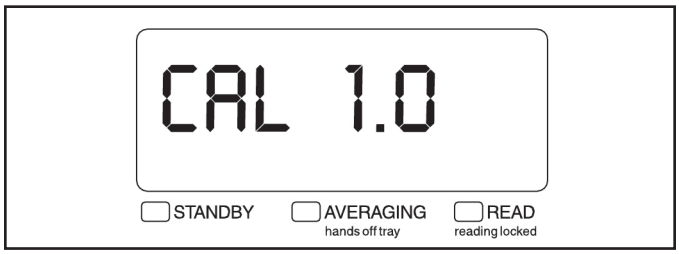


Fig. 3A

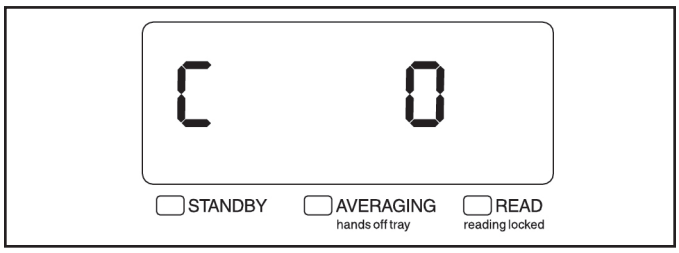


Fig. 3B

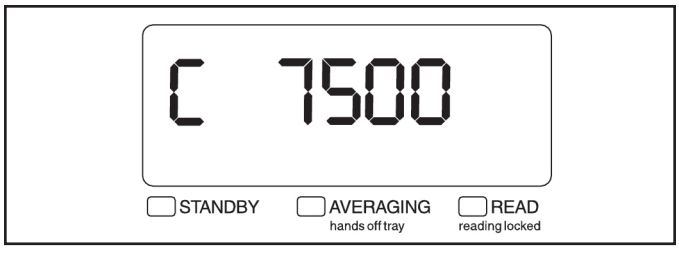


Fig. 3C

3. When “C 7500” appears, place the 7500-gram test weight in the center of the tray. Calibration is successful when “7500” locks on the display and the “Grams” signal and green “Read” light illuminate (***Fig. 3D***).

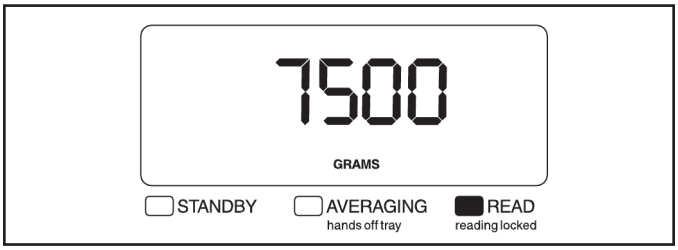


Fig. 3D

4. Proceed to the *Off Center Load Test*.

Off-Center Load Test

To check the accuracy of the load cell after calibration:

1. Place the 7500-gram test weight in the center of the tray and press **Reweigh**. Record the weight shown.
2. Place the test weight at one of the four test points shown in ***Fig. 3E***. Press **Reweigh** and record the weight shown.

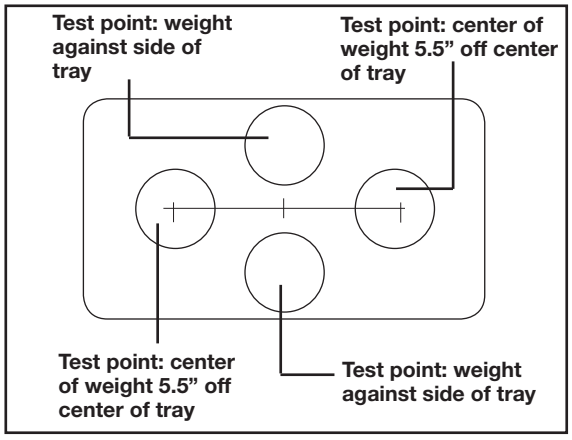

Test point: weight against side of tray
Test point: center of weight 5.5” off center of tray
Test point: center of weight 5.5” off center of tray
Test point: weight against side of tray

Fig. 3E

3. Repeat step 2 for the each test point shown in ***Fig. 3E***.
4. If any of the weights from the test points are ±6 grams different than the displayed weight from the center of the tray, the loadcell may be damaged and require replacement. Contact the Natus Medical Service Department for assistance.

How an Olympic Smart Scale Averages the Weight of an Active Baby

The Olympic Smart Scale uses a sensitive loadcell together with proprietary digital signal processing techniques (DSP) to detect the most accurate weight and motion of an infant. When weight-force is applied to the tray, electronic signals from the loadcell are processed by a series of electronic filters and a microprocessor to detect motion and determine averaged weight.

To assure accuracy, design parameters for calculating averaged weight were determined by weighing active babies. The software program for weight-averaging was then verified by further extensive testing in nurseries.

With its proprietary weight-averaging techniques, Olympic Smart Scale can, typically, weigh a moving baby to an accuracy of one gram.

EMI/EMC Compatibility

This equipment has been tested and found to comply with the EMC limits for the Medical Device Directive 93/42/EEC (EN 55011 Class A and EN 60601-1-2). These limits are designed to provide reasonable protection against harmful interference in a typical medical installation.

The equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with these instructions, may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference with other devices, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving device.
- Increase the separation between the equipment.
- Connect the equipment into an outlet on a circuit different from that to which the other device(s) is connected.
- Contact the Natus Medical Service Department.

Before Attempting Repair

⚠CAUTION: Service should only be performed by a qualified technician.

WARNING: Electrical shock hazard when enclosure is removed. Always unplug the power cord from the electrical outlet before cleaning or servicing.

CAUTION: PC boards contain static-sensitive parts. Always use appropriate ESD protection when enclosure is removed.

NOTE: After making any repairs the scale must be calibrated; ensure that you have the appropriate 7500-gram weight that is required for calibration before disassembling the scale. Other repairs involve the use of specific additional weights; review the repair information before disassembling the scale.

To determine the most likely cause of a problem, see *Troubleshooting* on page 3-20.

If an internal component needs to be tested, remove the scale enclosure according to *Disassembly* on page 3-6 and then follow the instructions in *Problems and Solutions* on page 3-10.

If the loadcell is damaged, return the scale to Natus Medical for service. Natus Medical does not recommend that customers attempt to repair loadcells, and will not warrant customer attempts to repair loadcells.

After identifying a problem PCB, see *Removing Internal Components* on page 3-16.

NOTE: Do not remove PCBs for troubleshooting.

Disassembly

⚠ *WARNING: Electrical shock hazard when enclosure is removed. Always disconnect the power cord from the electrical outlet before cleaning or servicing.*

CAUTION: PC boards contain static-sensitive parts. Always use appropriate ESD protection when enclosure is removed.

To disassemble the scale:

1. Turn the scale off and unplug its power cord from the electrical outlet.
2. Remove the tray by unscrewing four Phillips screws that hold the tray legs in place (***Fig. 3F***).

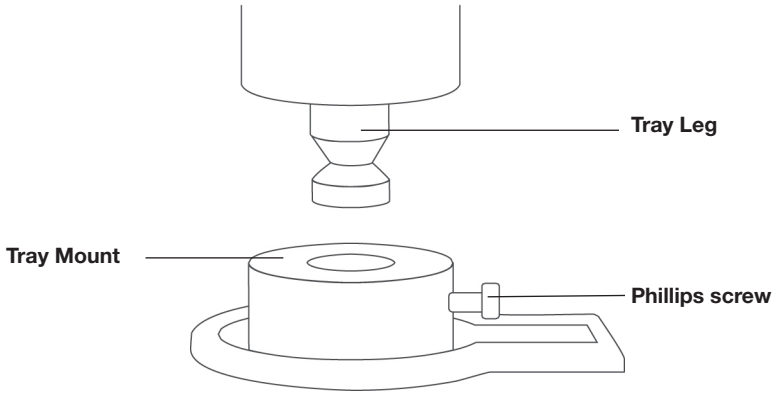


Fig. 3F

3. For cart-mounted scales, open the cart door and remove the four screws that secure the scale to the base (***Fig. 3G***). Lift the back of scale and slide scale backwards until the Volume Control Knob clears the front of the skirt. Next, lift the scale up, out of the base.

NOTE: If a cart-mounted model needs to be returned to Olympic Medical for servicing, only the scale portion needs to be removed and returned.

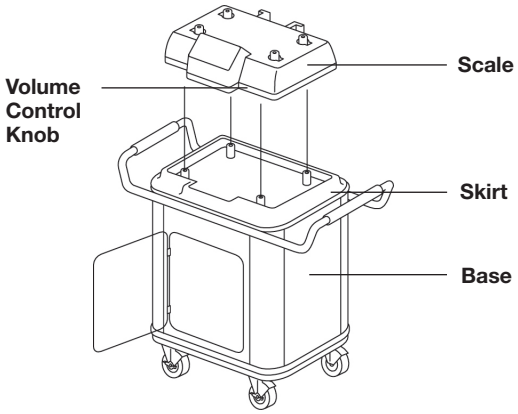


Fig. 3G

4. Carefully slide the front edge of scale over edge of a bench. Remove the front screw and then loosen the two screws on the front bottom hatch (***Fig. 3H***).

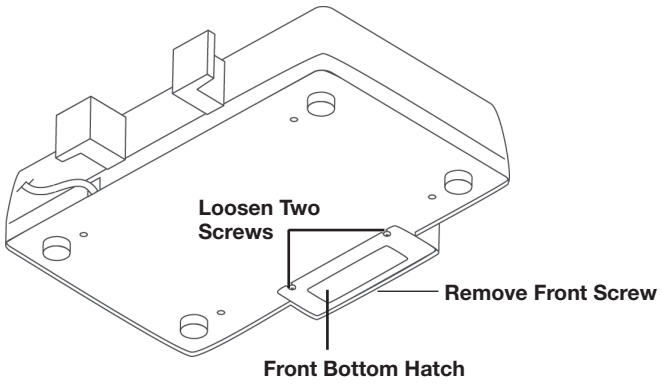


Fig. 3H

5. Slide the hatch back and lift it from its front edge. Next, slip the flat ribbon cable out of retaining clip and remove hatch.

6. Remove the eight screws around the lower edge of the case (***Fig. 3I***).

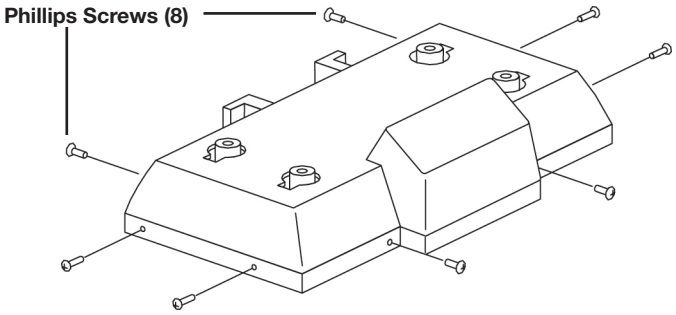


Fig. 3I

7. Ensure that the ribbon cable is connected to the display. Carefully lift off the upper case and rotate it 180º, pivoting around the ground and ribbon cable in the front. Set the rotated case down in front of the scale (***Fig. 3J***). (The display panel now faces the back.)

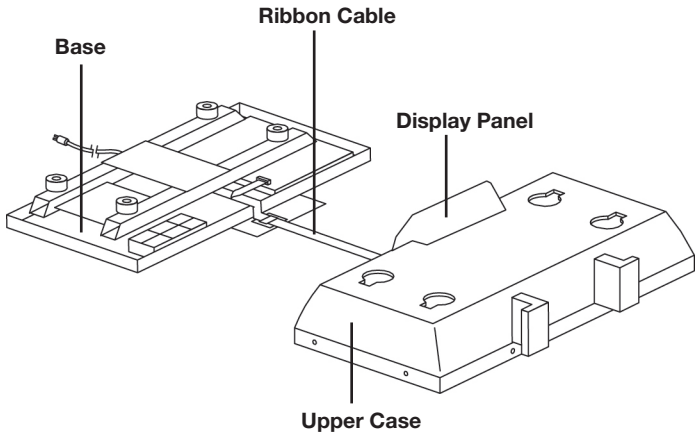


Fig. 3J

8. Internal components are now exposed to allow troubleshooting measurements (***Fig. 3K***); see *Problems and Solutions* on page 3-10.

   ⚠ CAUTION: To avoid risk of electrical shock when the device is disassembled, only use battery power, as required, for troubleshooting.

9. Reassemble the scale in reverse order of disassembly.

   ⚠ CAUTION: The Smart Scale must be recalibrated after it has been disassembled and reassembled; see *Calibration* on page 3-1.

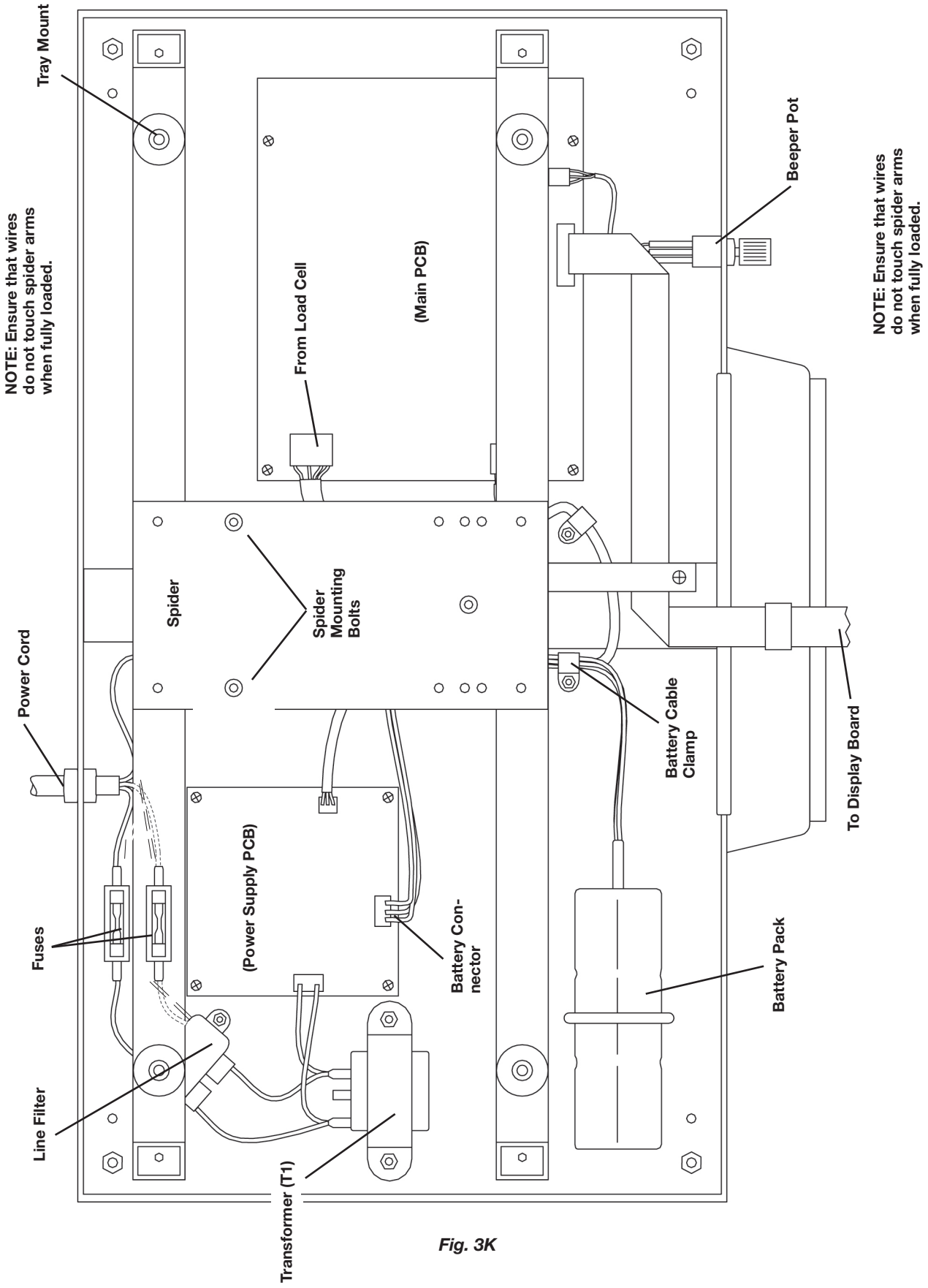

Tray Mount
NOTE: Ensure that wires do not touch spider arms when fully loaded.
From Load Cell
(Main PCB)
Beeper Pot
NOTE: Ensure that wires do not touch spider arms when fully loaded.
Spider
Spider Mounting Bolts
Power Cord
Battery Cable Clamp
To Display Board
(Power Supply PCB)
Fuses
Battery Con-nector
Battery Pack
Line Filter
Transformer (T1)

Fig. 3K

Problems and Solutions

Schematics, wiring diagrams and PCB drawings are located at the back of this manual.

Use the troubleshooting measurements, below, to test printed circuit boards (PCBs) and components that are suspect of being defective. For additional information, see *Troubleshooting* on page 3-20.

NOTE: The scale will not zero unless the tray is in place. Ensure that the tray is in place when troubleshooting.

Before performing troubleshooting measurements:

1. Disassemble the scale (see *Disassembly* on page 3-6).

⚠ CAUTION: To avoid risk of electrical shock when the device is disassembled, use battery power, as required, for troubleshooting.

2. Use appropriate methods to determine if voltage is present at the electrical outlet.

3. Ensure that all fuses and connectors are properly seated.

3. Check the supply voltages on main and power supply PCBs as shown in ***Fig. 3L***. If any voltages are out of tolerance, contact Natus Medical and replace the defective PCB.

ID	Test Point	Location PCB	Value
Vin	J4-1	Power supply	12.00 ±0.25Vdc
CHG/AC_ON	J3-1	Power supply	5.00 ±0.25Vdc
GND	TP1	Power supply	reference
Vbat	TP2	Power supply	7.2Vdc nominal
+5Vdigital	TP1	Main	5.00 ±0.1Vdc
+5Vanalog	TP2	Main	5.00 ±0.1Vdc
-5Vanalog	TP3	Main	-5.00 ±0.5Vdc

Fig. 3L

Problems and Solutions

A

"Standby" light blinks; scale does not show zero.

The signal is beyond the zero capture range or unstable:

1. With tray on scale, place the scale in the counts mode (see page 3-13). The displayed counts must be between 500–5000. If out of range:
   a. Test the loadcell (see page 3-13). If damaged, return the scale to Natus Medical for repair.
   b. Replace the main PCB.
2. If the displayed counts fluctuate more than ±4 counts:
   a. Ensure that the scale is on a stable, non-vibrating surface and is protected from moving air.
   b. Test the loadcell (see page 3-13). If damaged, return scale to Natus Medical for repair.
   c. Replace the main PCB.

B

Scale does not turn on and "Standby" does not blink.

On the main PCB, U1-1 should go logic low when **On/Off** is pressed.

1. Check F1 on the power supply PCB.
2. If F1 is good and the U1-1 does not go low:
   a. Test the membrane switch panel. Replace if non-functional.
   b. Test the display PCB ribbon cable. Replace if non-functional.
3. If it does go low:
   a. Replace the main PCB.

C

"Charging" light is on but the scale will not operate on battery power.

1. Check F2 on the power supply PCB.
2. Check F1 on the power supply PCB.
3. If F2 and F1 are good, connect the scale to a hospital-grade electrical outlet for 2.5 hours to charge batteries. If scale still will not operate, proceed to step 4.
4. When the batteries are fully charged (LED D5 flashes at 1/8-second rate) the battery voltage should be approximately 8.4 Vac.
   a. If not, replace the battery pack.
   b. If so, replace the power supply board.

D **"Reweigh," "gm/lb," or "Zero" switches do not work.**

1. Ensure that the membrane switch panel is properly connected.

   NOTE: If the gm/lb disabling switch has been activated (see page 1-2), **gm/lb** will be disabled and the scale will only display in grams or pounds without changing.

2. With power off, check resistance of switch at pin on J2 of the display PCB (***Fig. 3M***). Resistance must be <= 5 ohms when pressed. If not, replace the membrane switch panel.

Switch	J2 pin on display PCB
Common	7, 8, 9
1 g/5 g (resolution)	1
Recall	2
Zero	3
gm/lb	5
On/Off	6
Reweigh	4

Fig. 3M

3. Ensure that pressing the inoperative switch pulls its signal line to ground on the main PCB.

   a. If not, test display PCB ribbon cable. Replace if non-functional.

   b. If so, replace the main PCB.

Testing the display

E Simultaneously press **gm/lb** while powering on the scale. All LEDs illuminate with the exception of "Charging," which will only illuminate if line power is present.

(F) Testing the Loadcell

1. With an empty tray on the scale, enter counts mode (see below). If the displayed counts are outside of 500–5000, proceed to step 2.
2. Place a 7.5-kg weight on the tray and enter counts mode. Adjust the VR4 until the counts shown are 32768 ±20 counts (see *Adjusting the Zero Offset* on page 3-17).

   If step 2 is not possible, return the scale to Natus Medical for loadcell replacement.

(G) Weight Lock Inhibit Mode

Pressing **gm/lb** twice enters Weight Lock Inhibit Mode; in this mode, weights cannot lock on the display.

NOTE: Press off to exit test mode at any time.

(H) Counts Mode

Simultaneously press **Reweigh** and power on the scale. The raw AD counts show on the display. Press **Zero** to momentarily show the calibration coefficient. The calculation for conversion to grams is:

grams = (count - zero)(calcoeff/100,000).

Replacing the Battery Pack

⚠ *WARNING: Use of an incorrect battery pack could lead to equipment damage, explosion, or fire.*

WARNING: Electrical shock hazard when enclosure is removed. Always unplug the power cord from the electrical outlet before cleaning or servicing.

CAUTION: PC boards contain static-sensitive parts. Always use appropriate ESD protection when enclosure is removed.

To replace the battery pack:

1. Power off the scale and unplug its power cord from the electrical outlet.
2. Remove the scale enclosure (see *Disassembly* on page 3-6).
3. Clip the cable tie holding the battery pack and remove the battery cable clamp (***Fig. 3K***).

   NOTE: When reassembling, ensure that the battery lead to the main PCB is routed through the cable clamp.

4. Unplug the battery connector from the main PCB (***Fig. 3K***) and lift battery pack from its Velcro® hold-down. The battery pack is rated at 7.2 Vav, 1700 mAh, rapid charge.

   NOTE: Only replace the battery pack with Olympic battery pack, catalog no. 400850.

   ⚠ *WARNING: Use of incorrect battery pack could lead to equipment damage, explosion, or fire.*

5. After replacing the battery pack, reassemble the scale by reversing the steps described in *Disassembly* on page 3-6.

   NOTE: Charge new batteries for 2.5 hours before operating scale on battery power. To charge, ensure that the batteries are in place, then connect power cord to a hospital-grade electrical outlet. The amber “Charging” light illuminates while the device is connected to an electrical outlet.

Replacing Line Fuses

⚠ *WARNING: Electrical shock hazard when enclosure is removed. Always unplug the power cord from the electrical outlet before cleaning or servicing.*

CAUTION: PC boards contain static-sensitive parts. always use appropriate ESD protection when enclosure is removed.

To replace the line fuses:

1. Power off the scale and unplug its power cord from the electrical outlet.
2. Remove the scale enclosure (see *Disassembly* on page 3-6).
3. Remove fuse from fuse holder (***Fig. 3K***) and replace with 3/8 amp, 250 Vac Slo-Blo fuse, Natus Medical catalog no. 200021.
4. Reassemble the scale by reversing the steps described in *Disassembly* on page 3-6.

Replacing Power Supply Fuses

The fuses are located on the power supply PCB.

To replace the fuses:

1. Remove the power supply PCB (see *Removing Internal Components* below).
2. Carefully lift and remove the fuse (F1 and F2 on power supply PCB drawing, see page 3-26).
3. Place a new fuse into position; only use appropriately rated fuses, see *Parts List* on page 3-19.
4. Place the power supply PCB in its original position.

Removing Internal Components

To remove internal components:

1. Remove the scale enclosure (see *Disassembly* on page 3-6).
2. The H-shaped tray supporting structure above the loadcell, called the "spider," must be removed before the PCBs can be replaced. Remove the spider from the loadcell by unscrewing the two mounting screws (***Fig. 3N***).

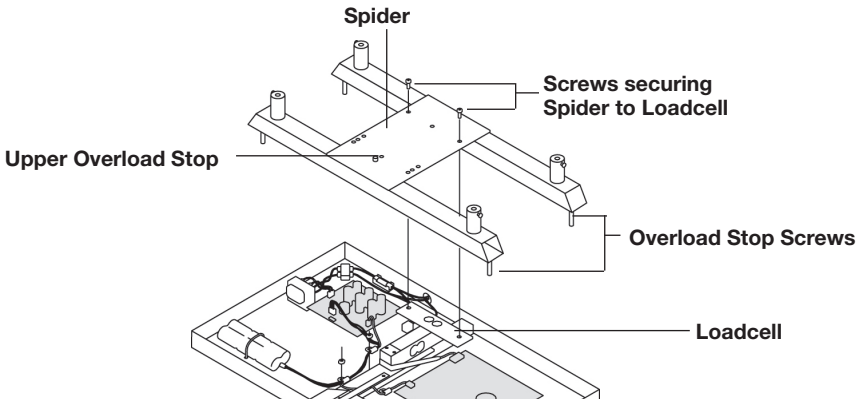
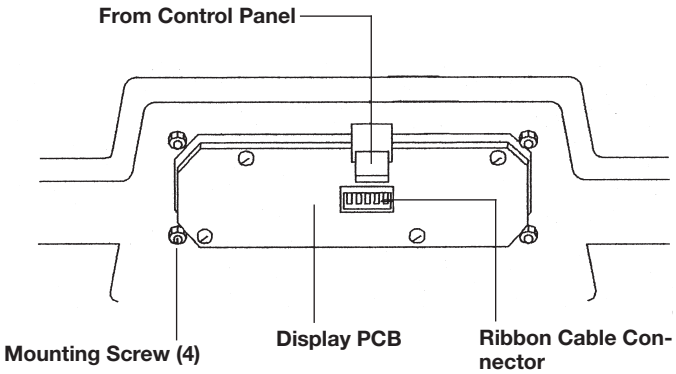


Fig. 3N

3. Remove the display PCB by disconnecting the ribbon cable from the display board, then unscrew the four mounting screws (***Fig. 3O***).



View looks up into enclosure

Fig. 3O

4. Remove the main and power supply boards by disconnecting all connectors, then unscrew the mounting screws (***Fig. 3K***).
5. After replacing main board, check and adjust the zero offset according to *Adjusting the Zero Offset* on page 3-17.

Adjusting the Zero Offset

NOTE: The Zero Offset must be adjusted after replacing the main PCB.

To adjust the zero offset:

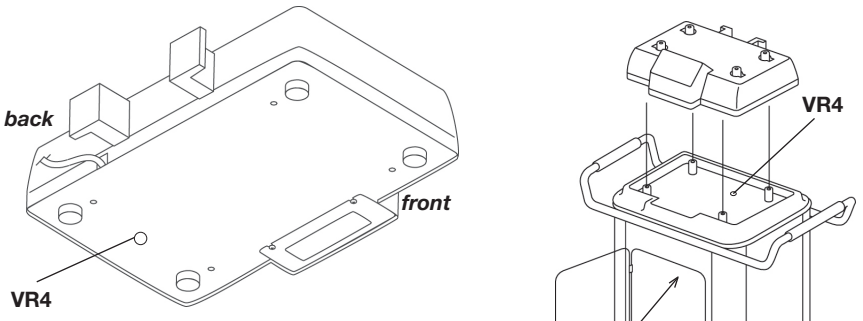
1. Place the scale on blocks high enough to allow access to potentiometer ports on underside of the scale. Ensure that the tray is in place.
2. Access counts mode by pressing **Reweigh** while turning on the scale (**On/Off**). Raw AD counts are shown.
3. Ensure that the tray is on the scale, then place a 7500-gram weight on the tray. (The weight is available from Natus Medical, catalog no. 56315).
4. Locate the potentiometer port for VR4 (see label on underside of scale).

   NOTE: For some cart-mounted scales the VR4 is accessible via the cart. On these scales, the labeled VR4 port is located under the top shelf, to the right. Earlier scales require removal from the cart to access the VR4.

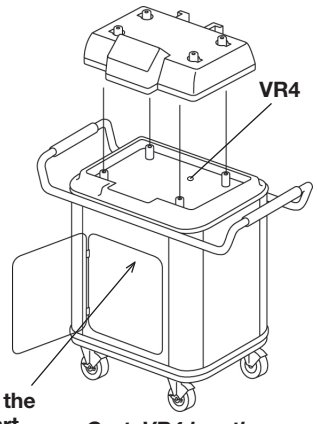
   NOTE: The scale enclosure need not be removed for VR4 adjustment, tray replacement, or calibration adjustment.
5. Adjust VR4 until the counts are 32768 ±10.
6. Recalibrate the scale (see *Calibration Procedure* on page 3-2), and test the accuracy with two known weights other than 7.5 kg (preferably one weight greater than 7.5 kg and the other less than 7.5 kg).

   NOTE: If displayed counts cannot be brought into range by adjusting the VR4, return the scale to Olympic Medical for service.

   NOTE: Recalibrate the scale before use.



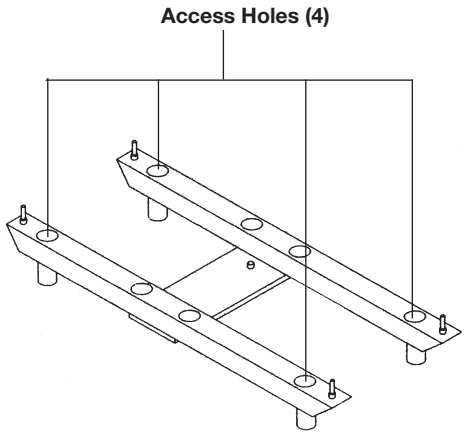
Underside of scale, VR4 location



On some models, access to the VR4 adjustment is via the cart

Cart, VR4 location

Fig. 3P



Spider turned upside-down

Fig. 3Q

Replacing the Tray Mounts

If a tray mount becomes stripped and will no longer tighten on the tray leg, replace the mount as follows:

1. Power off the scale and unplug its power cord from the electrical outlet.
2. Remove the scale enclosure (see *Disassembly* on page 3-6).
3. The tray mounts are attached to the spider. Remove the two screws that secure the spider assembly to the top of the loadcell, then remove the spider from the loadcell (***Fig. 3N***).
4. Turn the spider upside down (***Fig. 3Q***). The locknuts holding the tray mounts are accessible through the four access holes in the bottom of the support arms (***Fig. 3Q***); remove the locknuts and the old tray mounts.
5. Install the new tray mounts by tightening the tray mount bolts, ensuring that the Phillips head screw on each mount is aligned correctly (***Fig. 3R***). Before proceeding to the next step, ensure that the new tray installs and removes easily from the mounts; adjust the mounts by loosening or tightening the bolts as necessary.

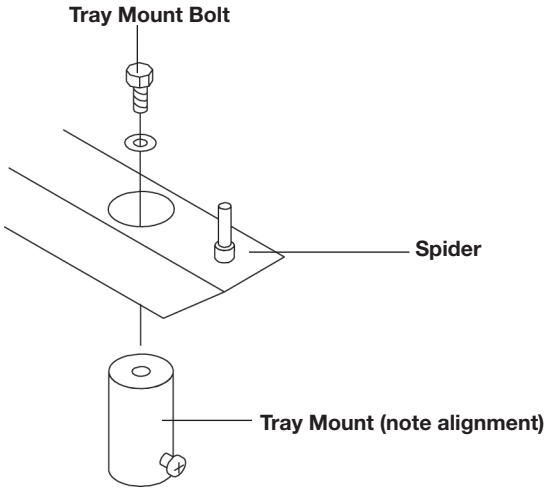


Fig. 3R

6. With the new tray mounts snugly fastened, install the spider on the scale base.

   NOTE: Before tightening the spider, ensure that it is parallel to the edges of the base and that both sides of the spider are equidistant (±1/16th") from the sides of the base.

7. Reassemble the scale by reversing the steps described in *Disassembly* on page 3-6.

   NOTE: Ensure that there is adequate clearance between the scale enclosure and each tray mount.

Warranty

One-year warranty on parts.

Repair and Replacement of Printed Circuit Boards and Components

When returning equipment for service:

1. Contact Natus Customer Service for a Return Merchandise Authorization (RMA) number and the location where the equipment should be sent.
2. Clean the device, securely package it, and include the RMA number on the outside of the box.
3. In the U.S., ship the equipment to:

Natus Medical Incorporated
5900 First Avenue South
Seattle, WA 98108 USA

Customer Service (US/Canada): 1-800-303-0306
Customer Service (worldwide): +1-650-802-0400
Customer Service Fax: 1-866-753-4823
Email: customer_service@natus.com

Technical Service (US/Canda): 1-866-940-7143
Technical Service (worldwide): +1-206-767-3500
Technical Service Fax: 1-206-767-0573
Email: seattle_technical_service@natus.com

Disposal of Product

Disposal of the Model 60/65 Smart Scale does not require any special precautions. Follow local waste disposal regulations for products containing rechargeable NiCad batteries.

Repair Parts

Item	Part No.
Support Arm Assembly	400290
Tray Mount Assembly	302099
Volume Control Knob	100124
Newborn Tray	56306
Main PCB Assembly	401168
Power Supply PCB Assembly	400864
Display PCB Assembly	401154
Front Panel Assembly	401149
120 Vac Transformer	200254
Ribbon Cable, Power Supply to Main Board	400885
Ribbon Cable, Display to Main Board	200152
120 Vac Fuse Line (AC), 1/4 amp Slow-Blo	200021-581
F1 Fuse	200021-617
F2 Fuse	200021-619
Battery Pack	400850
Cart Caster (front)	100066-521
Cart Caster (rear)	100066-523

Troubleshooting

The following is a chart of minor problems and their probable solutions. For problems beyond the scope of this chart, call Natus Medical toll free at 1-866-940-7143 in U.S. or Canada.

Problem	Probable Cause	Solution
"Standby" light blinks but scale wll not show "0".	Unit is out of calibration.	Calibrate the scale. See *Calibration* page 3-1.
	Malfunctioning loadcell.	Test the loadcell (see *Problems and Solutions* on page 3-10).
	Malfunctioning main PCB.	Test the board (see *Problems and Solutions* on page 3-10).
	Malfunctioning power supply PCB.	Test the board (see *Problems and Solutions* on page 3-10).
Scale will not illuminate and "Standby" light does not blink.	Battery power drained and device not connected to electrical outlet.	Connect the device to an appropriate electrical outlet, then allow the to battery to recharge for 2.5 hours.
	Blown fuse.	Replace the fuse (see *Replacing the Fuse* on page 3-15).
	Malfunctioning membrane switch panel.	Test the switch panel (see *Problems and Solutions* on page 3-10).
	Malfunctioning power supply PCB.	Test the board (see *Problems and Solutions* on page 3-10).
	Malfunctioning main PCB.	Test the board (see *Problems and Solutions* on page 3-10).
	Malfunctioning display PCB.	Test the display PCB (see *Problems and Solutions* on page 3-10).
	Defective display panel cable.	Test the display cable.
Scale will not reweigh with "Re-weigh" button. Scale will not zero with "Zero" button.	Malfunctioning membrane switch panel.	Test the switch panel (see *Problems and Solutions* on page 3-10).
Scale will not change resolution with "1 gm/5gm" button.	Defective display panel cable.	Test the display cable.
Scale will not display last locked weight with "Recall" button.	Malfunctioning main PCB.	Test the board (see *Problems and Solutions* on page 3-10).
Scale will not change units with "gm/lb" button.	Gm/lb disabling switch is active.	Deactivate gm/lb disabling switch (see page 1-2).
	Malfunctioning membrane switch panel.	Test the switch panel (see *Problems and Solutions* on page 3-10).
	Defective display panel cable.	Test the display cable.
	Malfunctioning main PCB.	Test the board (see *Problems and Solutions* on page 3-10).
Scale will not lock weight on display and green "Read" light does not illuminate.	Scale in weight lock inhibit test mode (see page 3-13).	Turn the scale off to exit test mode.
	Malfunctioning main PCB.	Test the board (see *Problems and Solutions* on page 3-10).

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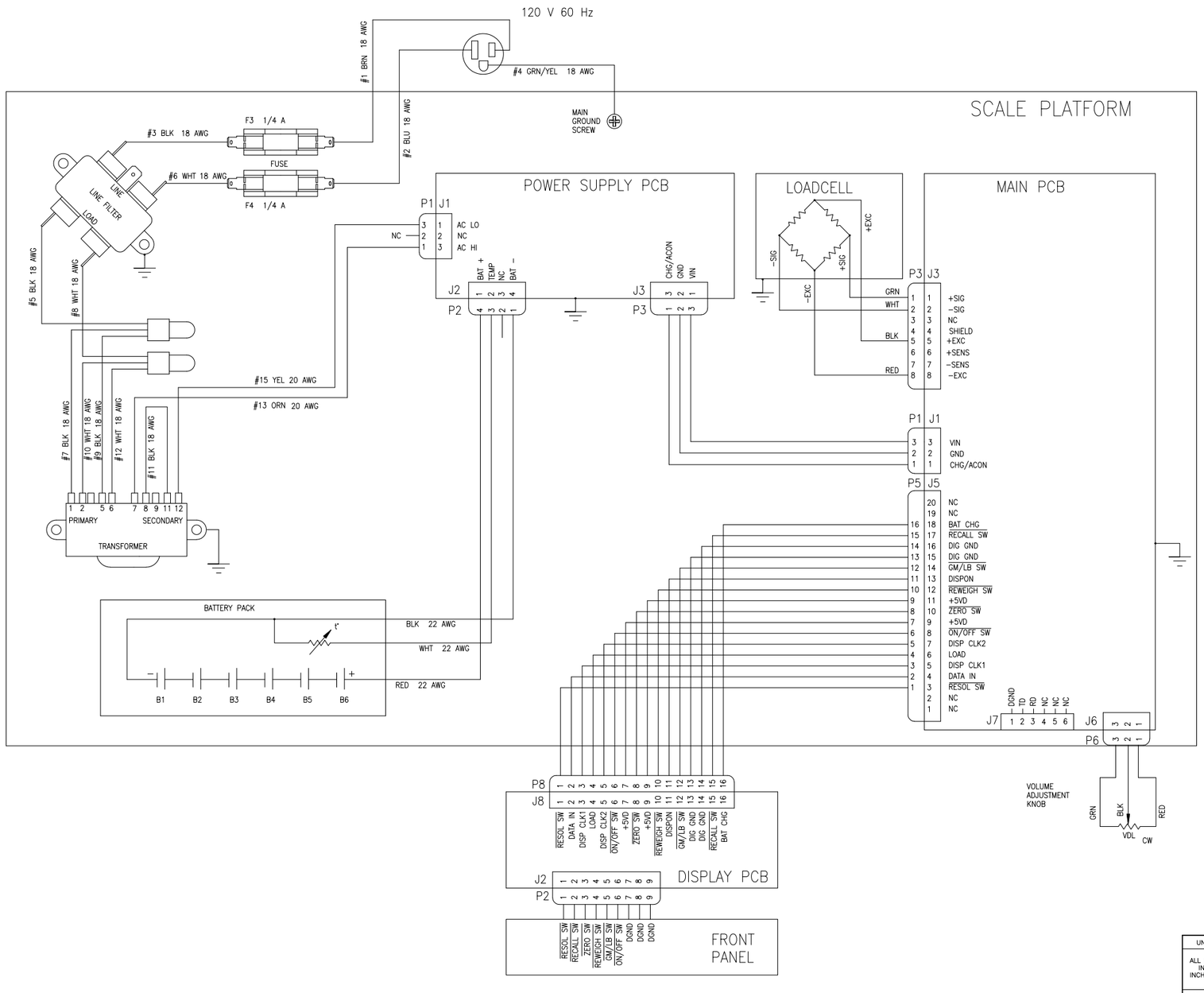
REVISIONS				
LTR	DESCRIPTION	ECN	DATE	APPROVAL
–	PRODUCTION RELEASE	7690	1/31/02	DJD
A	REVISED J2, P2 CONNECTOR PIN CALLOUTS; REVISED J6, P6 CONNECTOR PIN CALLOUTS			



NOTES:

1. ODD NUMBER WIRES ARE AC HOT
2. EVEN NUMBER WIRES ARE AC NEUTRAL OR GREEN
3. FOR REFERENCE SEE SCHEMATICS 700212, 700213, 700214
4. DESIGNATES A SOLDER CONNECTION
5. DESIGNATES A CRIMP MALE/FEMALE DISCONNECT
6. DESIGNATES A CRIMP CONNECTION
7. DESIGNATES A JOINT CRIMP CONNECTION

UNLESS OTHERWISE SPECIFIED			DO NOT SCALE DRAWING		
ALL DIM. IN INCHES	LINEAR TOL.	.XX	DRAWN	MJG	9/21/01
		.XXX	CHECK	JG	1/30/02
	ANGLE TOL.		ENGR.	DJD	1/31/02
MATL.			MFG.	RJ	1/31/02
FINISH			QUAL. C	MM	1/31/02
			MRKTG.		

OLYMPIC MEDICAL CORP
SEATTLE, WASHINGTON

WIRING DIAGRAM
120V 60Hz SS60, 65

SIZE D 700211

SCALE NONE REV. A SHEET 1 OF 1

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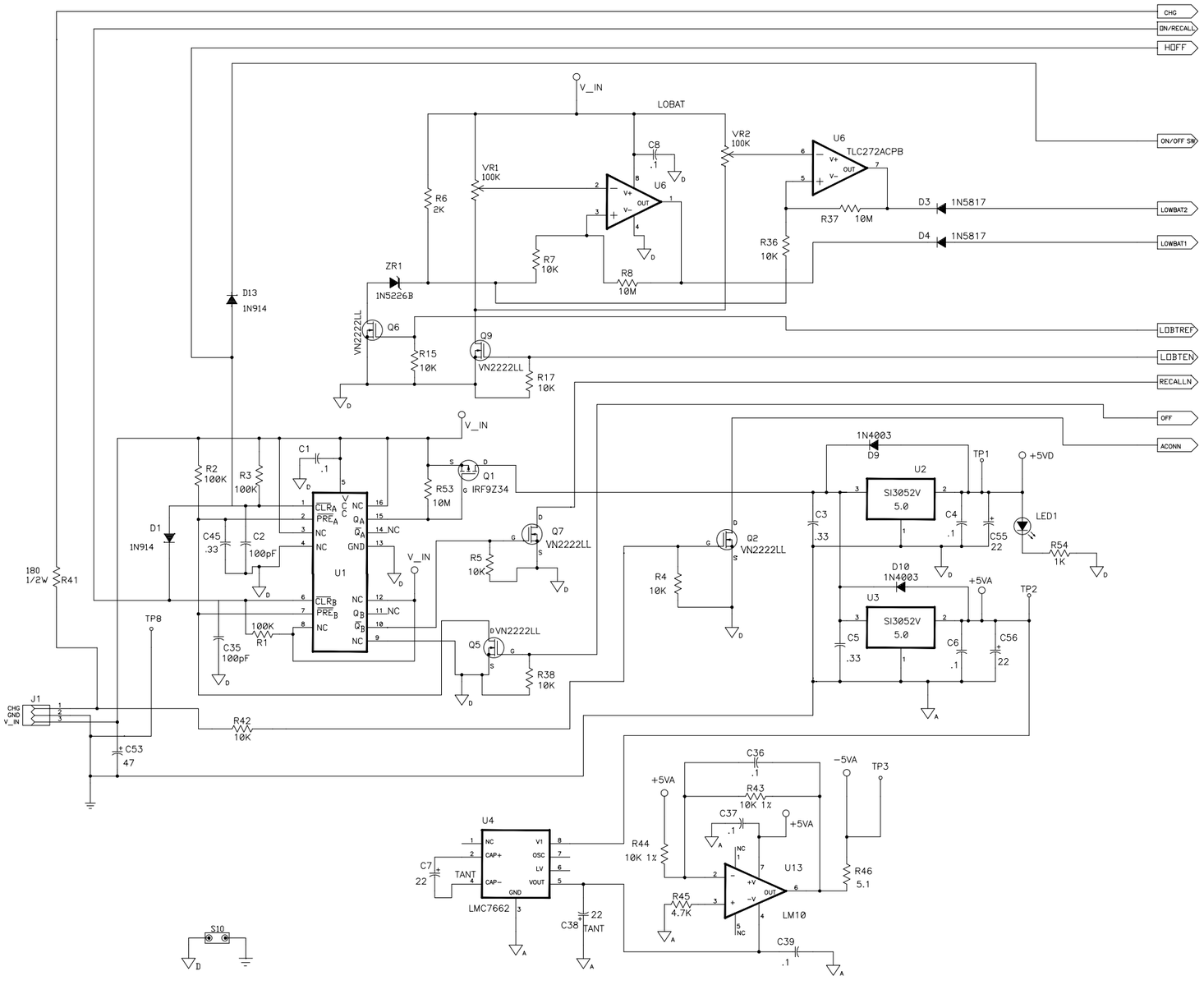
REVISIONS				
LTR	DESCRIPTION	ECN	DATE	APPROVAL
-	PRODUCTION RELEASE	7689	1/31/02	DJD
A	REVERSED RESOLSW AND ON/RECALL SW ON J5	7805	5/16/02	DJD
B	CHANGED U1 TO MATCH 74C74 SIGNALS			



1. ALL RESISTORS 1/4 W, 5% UNLESS NOTED.
2. ALL CAPS IN uF UNLESS NOTED.
3. NS = NOT STUFFED

UNLESS OTHERWISE SPECIFIED			DO NOT SCALE DRAWING		
ALL DIM. IN INCHES	LINEAR TOL.	.XX	DRAWN	MJG	10/9/01
		.XXX	CHECK	MMM	1/30/02
	ANGLE TOL.		ENGR.	DJD	1/31/02
MATL.			MFG.	RJ	1/29/02
FINISH			QUAL. C	MM	1/31/02
			MRKTG.		

OLYMPIC MEDICAL CORP
SEATTLE, WASHINGTON

SCHEMATIC, MAIN
RAPID WEIGH 60, 65

SIZE D | 700212

SCALE NONE | REV. B | SHEET 1 OF 3

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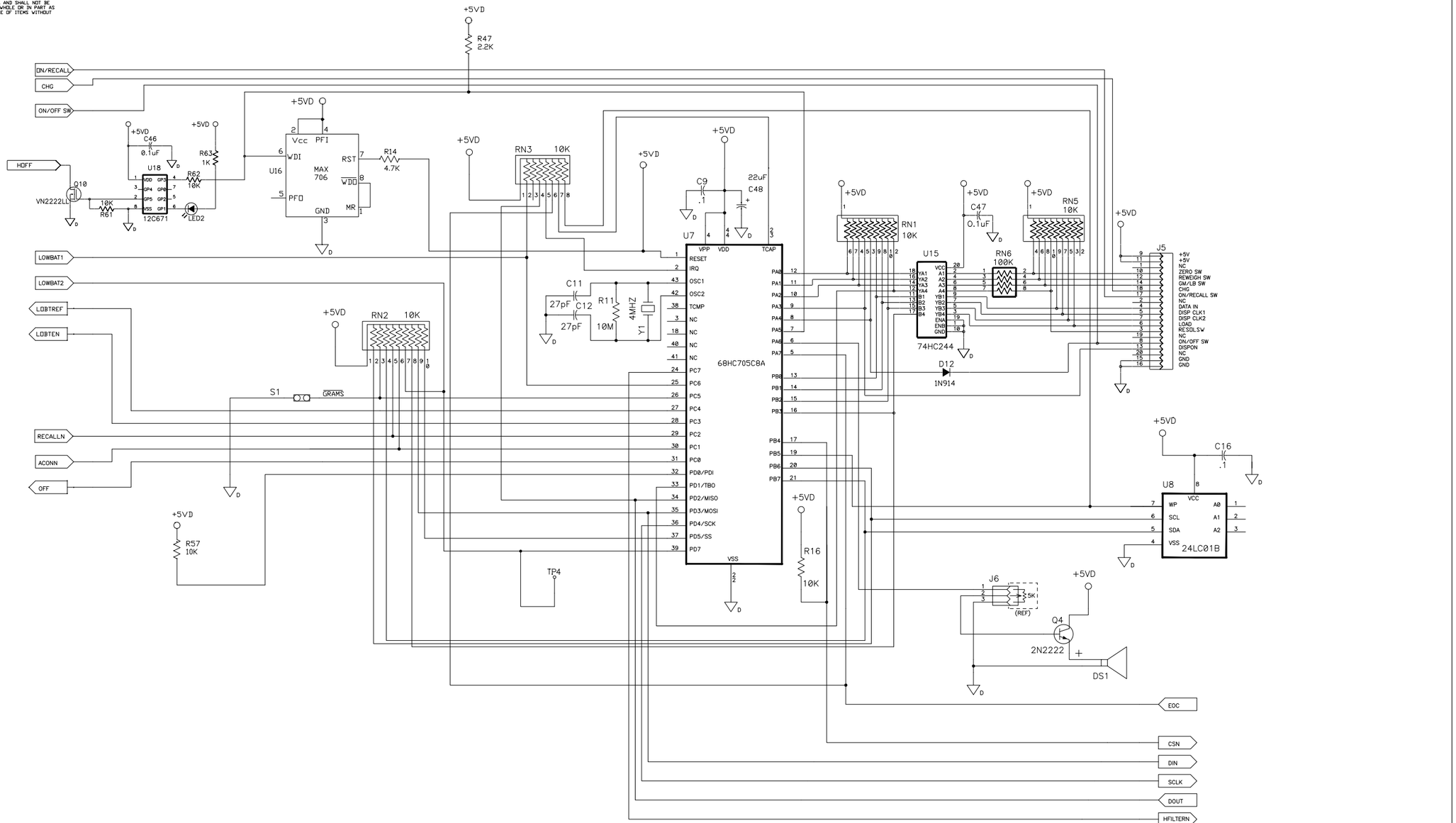

UNLESS OTHERWISE SPECIFIED	DO NOT SCALE DRAWING		OLYMPIC MEDICAL CORP
ALL DIM. IN INCHES — LINEAR TOL. .XX / .XXX — ANGLE TOL.	DRAWN	MJG	10/9/01	SEATTLE, WASHINGTON
MATL.	CHECK	MMM	1/30/02	SCHEMATIC, MAIN
	ENGR.	DJD	1/31/02	RAPID WEIGH 60, 65
	MFG.	RJ	1/29/02	SIZE D — 700212
FINISH	QUAL. C	MM	1/31/02	SCALE NONE — REV. B — SHEET 2 OF 3
	MRKTG.			

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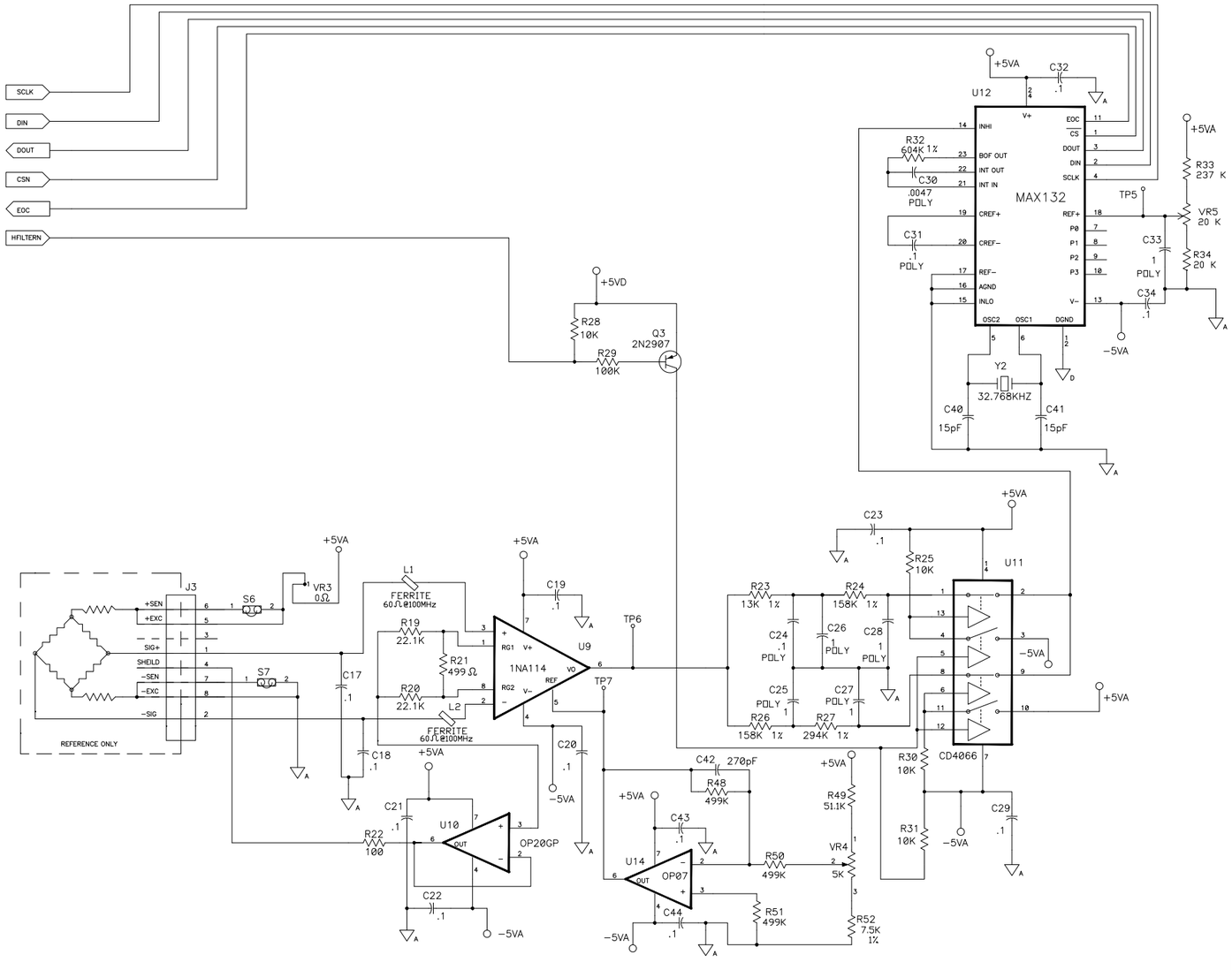
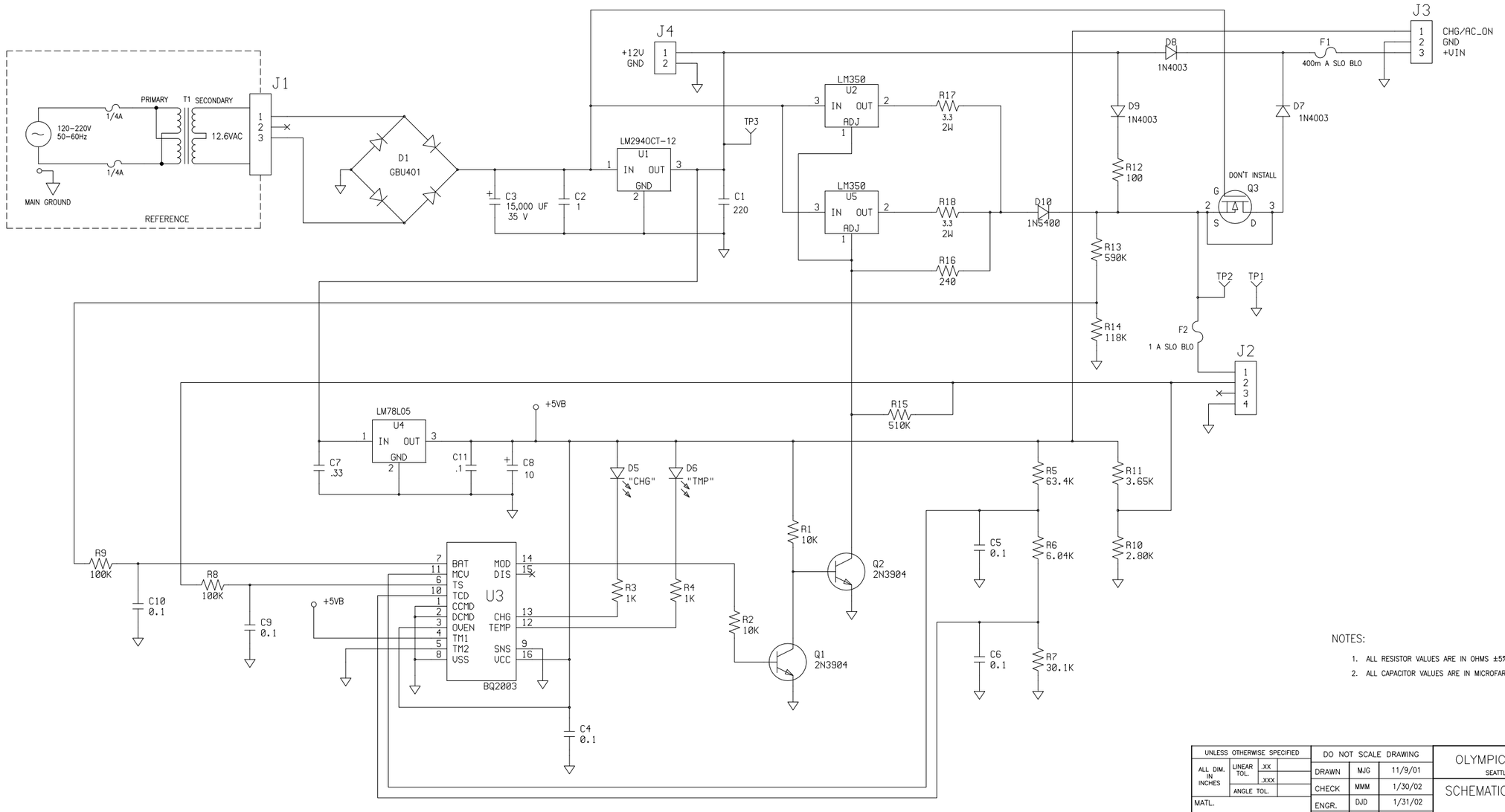


UNLESS OTHERWISE SPECIFIED			DO NOT SCALE DRAWING			OLYMPIC MEDICAL CORP SEATTLE, WASHINGTON
ALL DIM. IN INCHES	LINEAR TOL.	.XX	DRAWN	MJG	10/9/01	SCHEMATIC, MAIN RAPID WEIGH 60, 65
		.XXX	CHECK	MMM	1/30/02	
	ANGLE TOL.		ENGR.	DJD	1/31/02	
MATL.			MFG.	RJ	1/29/02	SIZE D 700212
FINISH			QUAL. C	MM	1/31/02	
			MRKTG.			SCALE NONE REV. B SHEET 3 OF 3

THIS DRAWING AND SPECIFICATIONS HEREIN, ARE THE PROPERTY OF THE OLYMPIC MEDICAL CORP. AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.

REVISIONS				
LTR	DESCRIPTION	ECN	DATE	APPROVAL
–	PRODUCTION RELEASE	7689	1/31/02	DJD
A	C8 WAS 47uF			



NOTES:

1. ALL RESISTOR VALUES ARE IN OHMS ±5%
2. ALL CAPACITOR VALUES ARE IN MICROFARADS.

UNLESS OTHERWISE SPECIFIED			DO NOT SCALE DRAWING		
ALL DIM. IN INCHES	LINEAR TOL.	.XX	DRAWN	MJG	11/9/01
		.XXX	CHECK	MMM	1/30/02
	ANGLE TOL.		ENGR.	DJD	1/31/02
MATL.			MFG.	RJ	1/29/02
FINISH			QUAL. C	MM	1/31/02
			MRKTG.		

OLYMPIC MEDICAL CORP
SEATTLE, WASHINGTON

SCHEMATIC, POWER SUPPLY

SIZE D | 700213

SCALE NONE | REV. A | SHEET 1 OF 1

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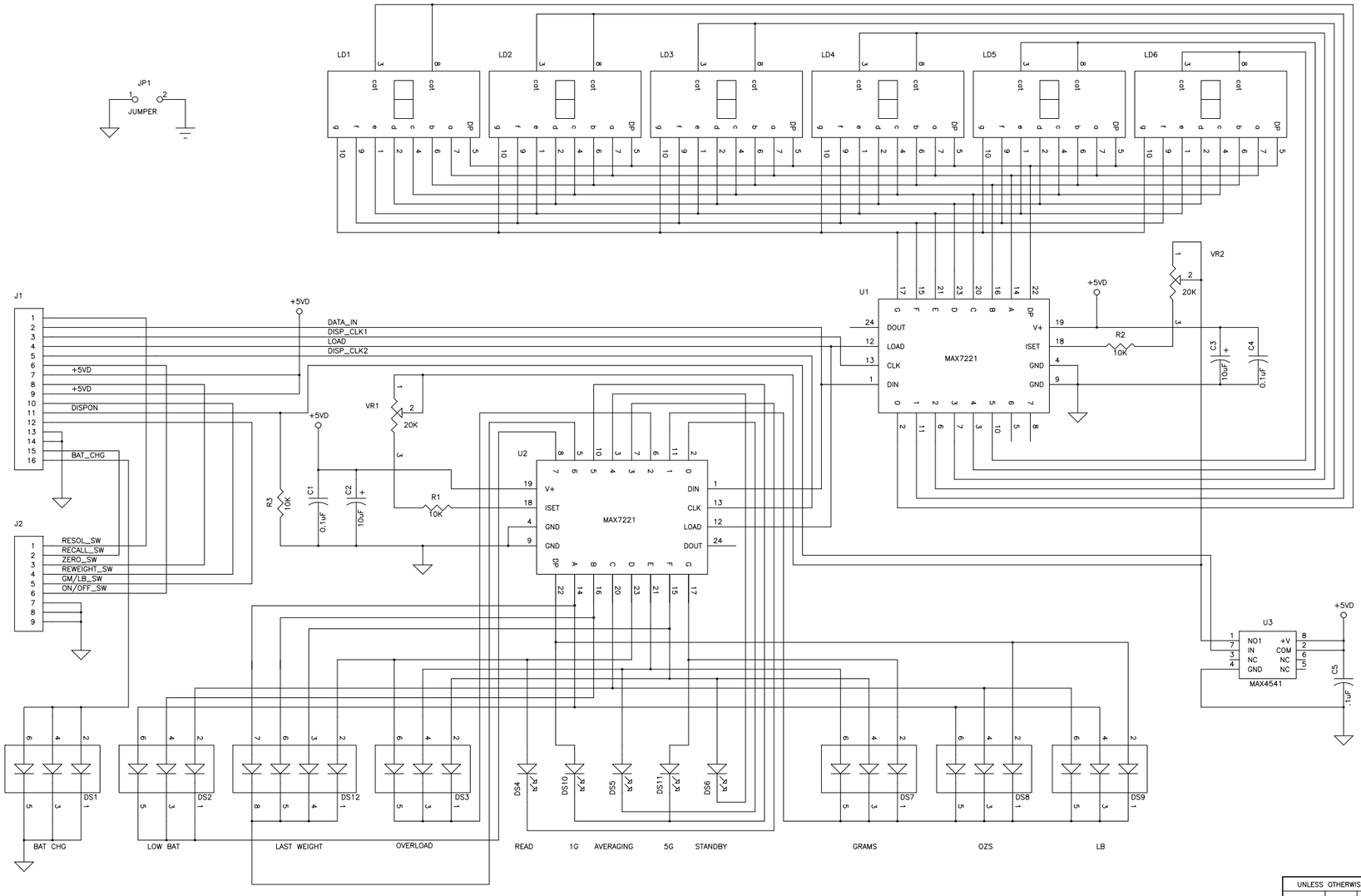
REVISIONS				
LTR	DESCRIPTION	ECN	DATE	APPROVAL
–	PROTOTYPE RELEASE			
A	ADDED R4–R8, Q1; DS8 & DS9 CHANGED TO 3 LED BARS			
B	PRODUCTION RELEASE	7689	1/31/02	DJD
C	DELETED Q1, R4–R7, CHANGED DS8, DS9, J1 CIRCUITS			



NOTES:

1. ALL RESISTOR VALUES ARE IN OHMS ±5%, UNLESS NOTED
2. ALL CAPACITOR VALUES ARE IN MICROFARADS, UNLESS NOTED.

UNLESS OTHERWISE SPECIFIED			DO NOT SCALE DRAWING			OLYMPIC MEDICAL CORP SEATTLE, WASHINGTON
ALL DIM. IN INCHES	LINEAR TOL.	.XX	DRAWN	MJG	10/2/01	SCHEMATIC, DISPLAY RAPID WEIGH MODEL 60, 65
		.XXX	CHECK	MMM	1/30/02	
	ANGLE TOL.		ENGR.	DJD	1/31/02	
MATL.			MFG.	RJ	1/29/02	SIZE D 700214
FINISH			QUAL. C	MM	1/31/02	SCALE 1:1 REV. C SHEET 1 OF 1
			MRKTG.			

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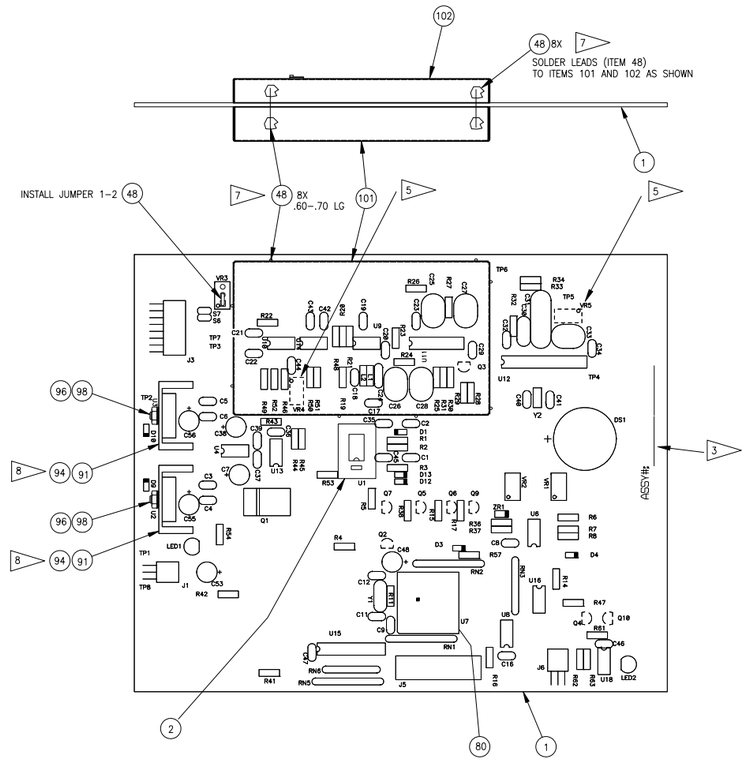

NOTES:

1. R- 4,5,7,15,16,17,25,28,30,31,36,38,42,57,61,62
2. C- 1,4,6,8,9,16,17,18,19,20,21,22,23,29,32,34,36,37,39,43,44,46,47
3. (F) WRITE IN WITH PERMANENT BLACK MARKER, OR APPLY A LABEL WITH THE CURRENT ASSEMBLY DASH NUMBER
4. NOT USED (NOT SHOWN ON DRAWING):
   C13, C14, C15, C54
   D5, D6, D7, D8, D11
   J2, J4
   JP11, JP12
   Q8
   R55, R56
   S1, S5, S8, S9, S10
   U5
5. VR4 AND VR5 ARE INSTALLED ON OTHER SIDE OF PCB
6. (F) USE .015-.030 THICK SHIMS BETWEEN PCB AND SHIELD, REMOVE SHIMS AFTER SOLDERING.
7. ITEM 48 PASSES THROUGH 8 UNMARKED HOLES IN PCB LOCATED ALONG DASHED LINE OF SILKSCREEN INDICATING OUTLINE OF ITEMS 101 AND 102.
8. (F) APPLY HEATSINK COMPOUND (ITEM 94) TO MATING SURFACES OF ITEMS 10 AND 91.

REVISIONS				
LTR	DESCRIPTION	ECN	DATE	APPROVAL
F	ADDED NOTE 7 TO CLARIFY ITEM 48 LOCATIONS ADDED TO NOTE 6, ALTERNATE SHIM SPACING.	9623	4/5/06	DJD
G	DELETED ALTERNATE TAPE CONSTRUCTION ON SHIELDS, DELETED ITEM 103, REWORDED NOTE 3, ADDED WIRE SPEC TO ITEM 48, ADDED NOTE 8			

		ITEM NO.	-501	DESCRIPTION	
(F)		–	103	–	–
		1	102	302479-01	SHIELD, EMI
		1	101	300386-01	SHIELD, EMI
		–	100	–	–
		1	99	200088-661	RESISTOR, FIXED CARBON (2K 1/4 W 5%) R6
		2	98	–	NUT, KEP HEX 4-40 PLTD STL
		–	97	–	–
		2	96	–	SCREW, PH PHILLIPS 4-40 X .38 LG PLTD STL
		–	95	–	–
		AR	94	900006-01	HEAT SINK COMPOUND
		–	93	–	–
		1	92	200166-503	CONNECTOR, (SOCKET HEADER) J5
		2	91	100206-503	HEATSINK
		2	90	200044-541	CONNECTOR, WAFER J1, J6
		1	89	200044-509	CONNECTOR, WAFER J3
		–	88	–	–
		2	87	200064-511	LED, DISPLAY (RED) LED1, LED2
		1	86	200116-507	CRYSTAL (32.768KHz) Y2
		1	85	200116-517	CRYSTAL (4Mz) Y1
		8	84	200113-507	TESTPOINT TP1, TP2, TP3, TP4, TP5, TP6, TP7,TP8
		1	83	200159-527	POTENTIOMETER, TRIMMING (5K) VR4
		–	82	–	–
		–	81	–	–
		1	80	200209-01	SOCKET, PLCC (44 PIN)
		3	79	200068-501	DIODE, SILICON (1N914) D1,D12,D13
		2	78	200068-503	DIODE, SILICON (1N4003) D9, D10
		2	77	200068-509	DIODE, SILICON (1N5817) D3,D4
		–	76	–	–
		1	75	200009-501	BUZZER (A1-550) DS1
		6	74	200066-513	TRANSISTOR (VN2222LL) Q2, Q5, Q6, Q7, Q9, Q10
		1	73	200066-505	TRANSISTOR (2N2222A) Q4
		1	72	200066-507	TRANSISTOR (2N2907) Q3
		–	71	–	–
		1	70	200066-517	TRANSISTOR (IRF9Z34) Q1
		1	69	200094-531	CAPACITOR, ELECTROLYTIC (47μF 25V) C53
		–	68	–	–
		2	67	200108-519	CAPACITOR, MONO CERAMIC (100pF 100V) C2, C35
		1	66	200222-503	CAPACITOR, METAL POLYESTER (.1μF 50V) C24
		1	65	200177-507	CAPACITOR, POLYPROPYLENE (.1μF 50V) C31
		–	64	–	–
		–	63	–	–
		1	62	200177-505	CAPACITOR, POLYPROPYLENE (.0047μF 50V) C30
		1	61	200108-503	CAPACITOR, MONO CERAMIC (270pF 50V) C42
		2	60	200108-525	CAPACITOR, MONO CERAMIC (27pF 100V) C11,C12
		2	59	200108-527	CAPACITOR, MONO CERAMIC (15pF 100V) C40,C41
		3	58	200108-507	CAPACITOR, MONO CERAMIC (.33μF 50VDC) C3,C5, C45
		23	57	200108-01	CAPACITOR, MONO CERAMIC (.1μF 50VDC) 2
		–	56	–	–
		5	55	200070-513	CAPACITOR, TANTALUM (22μF 25V) C7, C38, C48, C55, C56
		–	54	–	–
		1	53	200092-673	RESISTOR, FIXED METAL FILM (7.5K 1%) R52
		1	52	200117-513	RESISTOR NETWORK (10K 8 PIN BUSSED SIP) RN3
		3	51	200117-523	RESISTOR NETWORK (10K 10 PIN BUSSED SIP) RN1, RN2, RN5
		5	50	200222-501	CAPACITOR, METAL POLYESTER (1μF 50V) C25, C26, C27, C28, C33
		1	49	200068-533	DIODE, SILICON (1N5226B) ZR1
(F)		AR	48	900125-507	WIRE, BUSS 7 S6, S7, VR3
		–	47	–	–
		–	46	–	–

401168-501 MAIN PCB ASSY.

PART NO. DESCRIPTION

PARTS LIST CON'T

QTY PER ASSY.

		ITEM NO.	-501	DESCRIPTION	
		1	45	200117-511	RESISTOR NETWORK (100K 8 PIN SIP) RN6
		–	44	–	–
		1	43	200092-643	RESISTOR, FIXED METAL FILM (604K 1%) R32
		1	42	200092-655	RESISTOR, FIXED METAL FILM (499Ω 1%) R21
		1	41	200092-639	RESISTOR, FIXED METAL FILM (294K 1%) R27
		2	40	200092-637	RESISTOR, FIXED METAL FILM (158K 1%) R24,R26
		1	39	200092-721	RESISTOR, FIXED METAL FILM (237K 1%) R33
		1	38	200092-581	RESISTOR, FIXED METAL FILM (20K 1%) R34
		1	37	200092-633	RESISTOR, FIXED METAL FILM (13K 1%) R23
		2	36	200092-535	RESISTOR, FIXED METAL FILM (10K 1%) R43,R44
		1	35	200092-647	RESISTOR, FIXED METAL FILM (51.1K 1%) R49
		–	34	–	–
		–	33	–	–
		1	32	200088-685	RESISTOR, FIXED CARBON (180Ω 1/2W 5%) R41
		4	31	200088-519	RESISTOR, FIXED CARBON (100K 1/4W 5%) R1, R2, R3, R29
		1	30	200088-567	RESISTOR, FIXED CARBON (100Ω 1/4W 5%) R22
		3	29	200092-551	RESISTOR, FIXED METAL FILM (499K 1%) R48,R50,R51
		2	28	200236-501	TOROID, FERRITE (60 Ω @ 100 MHz) L1, L2
		2	27	200092-631	RESISTOR, FIXED METAL FILM (22.1K 1%) R19, R20
		4	26	200088-581	RESISTOR, FIXED CARBON (10M 1/4W 5%) R8, R11, R37, R53
		16	25	200088-511	RESISTOR, FIXED CARBON (10K 1/4W 5%) 1
		1	24	200088-607	RESISTOR, FIXED CARBON (5.1Ω 1/4W 5%) R46
		2	23	200088-569	RESISTOR, FIXED CARBON (4.7K 1/4W 5%) R45, R14
		2	22	200159-501	POTENTIOMETER, TRIMMING (100K) VR1, VR2
		1	21	200088-577	RESISTOR, FIXED CARBON (2.2K 1/4W 5%) R47
		2	20	200088-525	RESISTOR, FIXED CARBON (1K 1/4W 5%) R54, R63
		1	19	200159-505	POTENTIOMETER, TRIMMING (20K) VR5
		–	18	–	–
		1	17	401167-503	CHIP ASSY., PROGRAMMED U7
		1	16	200093-645	IC, INTEGRATED CIRCUIT (74HC244AN) U15
		1	15	401070-01	CHIP ASSY., PROGRAMMED U18
		1	14	200093-583	IC, INTEGRATED CIRCUIT (OP07EP OP AMP) U14
		1	13	200093-541	IC, INTEGRATED CIRCUIT (LM10CN OP AMP VOLT. REF.) U13
		1	12	200175-511	IC, MEMORY (24LC01BI/P CMOS EEPROM) U8
		1	11	200093-643	IC, INTEGRATED CIRCUIT (MAX 706) U16
		2	10	200112-505	REGULATOR, VOLTAGE (3052V) U2, U3
		1	9	200093-673	IC, INTEGRATED CIRCUIT (MAX132) U12
		1	8	200093-575	IC, INTEGRATED CIRCUIT (CD4066BCN) U11
		1	7	200093-581	IC, INTEGRATED CIRCUIT (OP20GP) U10
		1	6	200093-655	IC, INTEGRATED CIRCUIT (1NA114AP) U9
		–	5	–	–
		1	4	200093-587	IC, INTEGRATED CIRCUIT (TLC272ACPA) U6
		1	3	200093-539	IC, INTEGRATED CIRCUIT (7662ACPA) U4
		1	2	401541-01	ADAPTER PCB ASSY., JK FLIP FLOP U1
		1	1	302107-503	PCB, MAIN

401168-501 MAIN PCB ASSY. (60, 65)

PART NO. DESCRIPTION

PARTS LIST

QTY PER ASSY.

FINISH

MATL.

UNLESS OTHERWISE SPECIFIED: ALL DIM. IN INCHES; LINEAR TOL. .XX, .XXX; ANGLE TOL.

DO NOT SCALE DRAWING

DRAWN	MJG	10/9/01
CHECK	MMM	1/30/02
ENGR.	DJD	1/31/02
MFG.	RJ	1/29/02
QUAL. C	MM	1/31/02
MRKTG.		

OLYMPIC MEDICAL CORP
SEATTLE, WASHINGTON

MAIN PCB ASSY.

SIZE D 401168

SCALE NONE REV. G SHEET 1 OF 1

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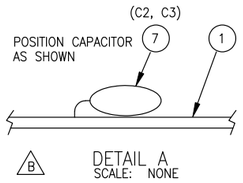

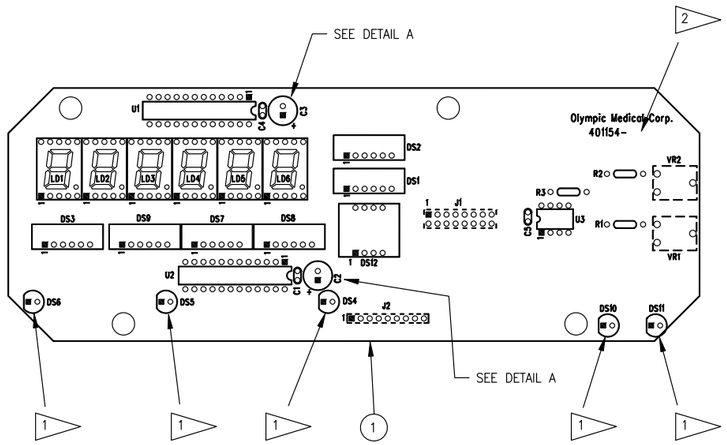

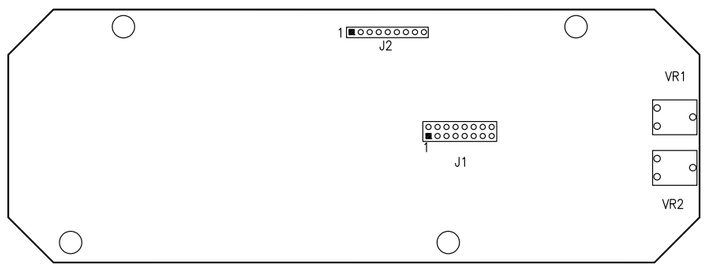

NOTES:

1. POSITION SO THAT BOTTOM OF LED IS .04–.08 FROM SURFACE OF PCB
2. (B) WRITE IN WITH PERMANENT BLACK MARKER, OR APPLY A LABEL WITH THE CURRENT ASSEMBLY DASH NUMBER

REVISIONS				
LTR	DESCRIPTION	ECN	DATE	APPROVAL
–	PRODUCTION RELEASE	7689	1/31/02	DJD
A	NCD –01, ADDED –501	7864	8/27/02	DJD
B	ADDED DETAIL A, REWORDED NOTE 2			

			ITEM NO.	PART NO.	DESCRIPTION	
–	–	2	22	200159–533	POTENTIOMETER, TRIM (20K)	VR1, VR2
–	–	–	21	–	–	
–	–	–	20	–	–	
–	–	–	19	–	–	
–	–	–	18	–	–	
–	–	–	17	–	–	
–	–	3	16	200064–519	LED, DISPLAY (GREEN)	DS4, DS10, DS11
–	–	2	15	200064–521	LED, DISPLAY (AMBER)	DS5, DS6
–	–	1	14	200093–693	IC (MAX 4541)	U3
–	–	1	13	300437–517	HEADER, MODIFIED STRAIGHT	J2
–	–	–	12	–	–	
–	–	1	11	200166–505	CONNECTOR, SOCKET HEADER (2 X 16)	J1
–	–	–	10	–	–	
–	–	6	9	200063–511	LED, DISPLAY (7 SEG)	LD1–LD6
–	–	3	8	200108–01	CAPACITOR, CERAMIC (.1 μF 50V)	C1, C4, C5
–	–	2	7	200070–507	CAPACITOR, TANTALUM (10 μF 25V)	C2, C3
–	–	–	6	–	–	
–	–	3	5	200088–511	RESISTOR, FIXED CARBON (10K 1/4 W 5 %)	R1, R2, R3
–	–	1	4	200114–523	LED, LIGHT BAR	DS12
–	–	6	3	200114–521	LED, LIGHT BAR	DS1, DS2, DS3, DS7, DS8, DS9
–	–	2	2	200093–639	IC (8 DIGIT LED DISPLAY DRIVER MAX 7221CNG)	U1, U2
–	–	1	1	302095–503	PCB ASSY., DISPLAY	
				401154–501	PCB ASSY., DISPLAY (60,65)	

PARTS LIST

UNLESS OTHERWISE SPECIFIED
ALL DIM. IN INCHES — LINEAR TOL. .XX ±.03; .XXX ±.015; ANGLE TOL.
MATL.
FINISH
QTY PER ASSY.

DO NOT SCALE DRAWING

DRAWN	MJG	10/10/01
CHECK	MMM	1/30/02
ENGR.	DJD	1/31/02
MFG.	RJ	1/29/02
QUAL. C	MM	2/1/02
MRKTG.		

OLYMPIC MEDICAL CORP
SEATTLE, WASHINGTON

PCB ASSY., DISPLAY
(RAPID WEIGH 60, 65)

SIZE C | 401154 | SCALE 1:1 | REV. B | SHEET 1 OF 1